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SCHEDULE OF MEETINGS

26 November-8 December	**African Conference on Bilharziasis, Brazzaville**
27 November-3 December	**Expert Committee on Rabies, Paris**
3-10 December	**Joint FAO/WHO Technical Meeting on Food Additives, Rome**
3-10 December	**Study Group on Revision of Brussels Agreement of 1924, Oslo**
4-8 December	**Study Group on the Use of Specifications for Pharmaceutical Preparations, Geneva**
6-7 December	**Borneo Inter-Territorial Malaria Conference, Kuching, Sarawak**
10-15 December	**Expert Committee on Mental Health, Geneva**
10-15 December	**Expert Committee on Health Statistics, Geneva**
7-12 January	**Standing Committee of the Executive Board on Administration and Finance, Geneva**
14-20 January	**WHO Tuberculosis Workers' Conference, New Delhi**
15-26 January *	**Nineteenth session of the Executive Board, Geneva**
21-26 January	**Seminar on Application of International Sanitary Regulations, Maracay**
31 March-13 April	**Regional Training Course on Rabies, Caracas**
7 May-24 May *	**Tenth World Health Assembly, Geneva**
27-31 May *	**Twentieth session of the Executive Board, Geneva**

* Termination dates are tentative

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AEDES AEGYPTI ERADICATION IN THE AMERICAS *

Efforts to control yellow fever through elimination of *Aëdes aegypti* began in 1901, when the results of experiments made by Reed, Agramonte, and Carrol in Havana, Cuba, confirmed the studies of Finlay. The first real success followed very shortly, with the work of Gorgas in Cuba and Panama and Emilio Ribas and Oswaldo Cruz in Brazil, who undertook to protect water tanks through mechanical and chemical means and to destroy adult mosquitos.

Inter-American co-operation in public health had its inception in December 1902 with the creation of the Pan American Sanitary Bureau (PASB). One of the duties of the new Bureau was " to combat mosquitos ", meaning the vector of urban yellow fever, a disease that was then one of the greatest threats to public health, on a par with plague, cholera, and smallpox. Subsequently, protective measures were instituted at ports and adjacent areas and were later extended to all localities from which yellow fever could be carried from one country to another. Campaigns against *Aëdes aegypti* were started, and the disease was eliminated from many areas.

The success of these early campaigns and the resulting belief that the yellow fever problem had been solved because it had disappeared from urban centres led to a decrease in emphasis on control of this disease between 1910 and 1927. In 1928, however, the picture changed: yellow fever broke out again in Rio de Janeiro. In 1929 it appeared in Colombia, and in 1932 in Santa Cruz de la Sierra, Bolivia. The circumstances of these outbreaks gave rise to the suspicion that some new factor had entered the scene. This new factor was identified in 1932 when Soper and his colleagues discovered jungle yellow fever.

Campaigns against *Aëdes aegypti* were resumed on the bases previously established, and great progress was made in keeping the epidemics from spreading, through methods directed against domestic water containers—the potential breeding-places of the vector. The Rockefeller Foundation, which had been aiding in the control of yellow fever in several countries, took over and intensified the campaigns. Specialized services were organized, among which the National Yellow Fever Service of Brazil was particularly noteworthy.

Oil was utilized in eliminating larvae foci. Its use for this purpose was made compulsory by regulations which at the time were considered truly " Draconian ". Valuable lessons were learned in the course of the control campaigns, and the idea of actually eradicating *Aëdes aegypti* was conceived. The first important step in this direction was attaining an *Aëdes aegypti* index of zero in Rio de Janeiro. Other areas in the southern, central, and northern parts of Brazil were gradually freed of *Aëdes aegypti*. Another accomplishment of similar nature was the elimination of *Anopheles gambiae* from the north-eastern part of Brazil in 1940, using techniques based on those employed by the National Yellow Fever Service.

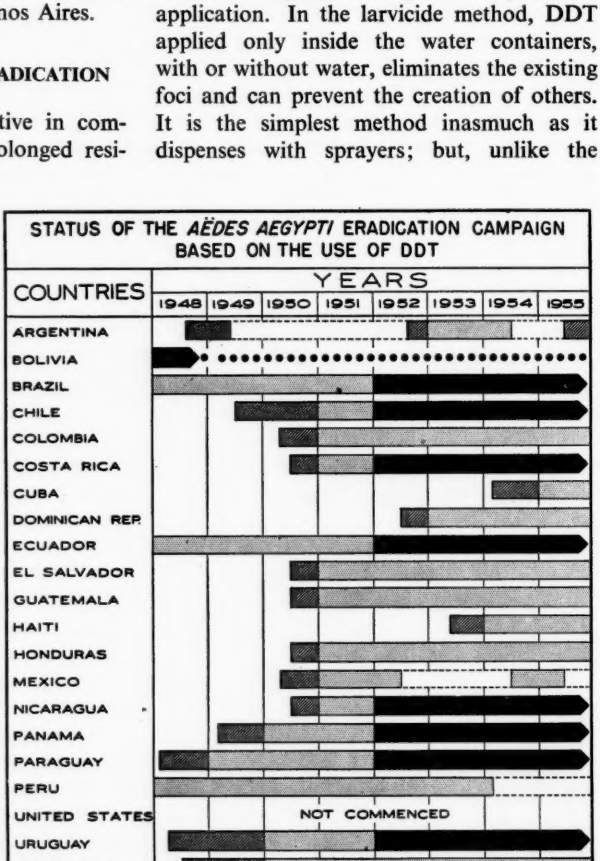
In 1947, the Directing Council of the PASB entrusted to the Bureau the " solution of the continental problem of urban yellow fever, based fundamentally on the eradication of *Aëdes aegypti*, without prejudice to other measures which regional circumstances may indicate . . . ". A co-ordinated campaign among the countries concerned was initiated with the assistance of the PASB. This campaign is still in progress.

* This paper was prepared by Dr Octavio Pinto Severo, PASB Consultant on *Aëdes aegypti* eradication.

As the PASB acts as the WHO Regional Office for the Americas, it has been able to obtain funds from United Nations Technical Assistance for *Aëdes aegypti* eradication efforts. In addition, UNICEF has contributed to insect-control programmes in the Americas which have done much to further the cause of eradicating *Aëdes aegypti*. The work is co-ordinated through the PASB Zone Offices in Mexico, Guatemala, Jamaica, Lima, Rio de Janeiro, and Buenos Aires.

DDT IN AEDES AEGYPTI ERADICATION

DDT has proved very effective in combating *Aëdes aegypti*. Its prolonged residual action ensures a sufficient margin of safety with respect to its efficacy; it is completely harmless to man and domestic animals when used in the proper dosage; and it can be used in several forms—powder, suspension, emulsion, or solution. As an adulticide, DDT may be applied to the total surface in an "intradomiciliary" process which aims to reach every internal part of dwellings, as is done in combating malaria vectors; or it may be used outside and inside water containers, with or without water, and on nearby walls, in a technique termed "perifocal". It may also be utilized as a larvicide, applied inside water containers, with or without water. The first, or "intradomiciliary", process is undoubtedly the most effective since it offers the best possibilities of destroying the existing adult mosquitos and, by reaching the water containers, also destroys the aquatic forms. However, this process is too expensive and slow to be adopted in an intensive campaign in which the time factor and available resources have to be taken into account. The "perifocal" technique is based on well-known biological characteristics of the mosquito and tries to take all possible advantage of the residual action of DDT with less expense and greater rapidity of application. In the larvicide method, DDT applied only inside the water containers, with or without water, eliminates the existing foci and can prevent the creation of others. It is the simplest method inasmuch as it dispenses with sprayers; but, unlike the



other two procedures, it does not take full advantage of the residual action of DDT, which is rapidly diluted to levels below those which are effective.

The idea of applying DDT to central water supplies has found favour in very special cases. Such a technique can solve certain unique problems and serve also as a supplementary measure.

For any technique to be successful, the organization of the work and the available resources is of primary importance. Efficient and disciplined field teams, adequate transportation, and essential equipment and supplies are required, whatever the procedure for applying DDT. The essential is that the DDT be applied to all potential breeding-places; all else is accessory to this main objective.

The criterion for determining whether or not *Aëdes aegypti* has actually been eradicated from an area is a negative result in an appropriate number of inspections for the presence of the mosquito. In general, three consecutive negative checks are required, all of them performed within a period of at least one year, at intervals of three months or longer, and each covering at least one third of the houses in the area.

STATUS OF THE ERADICATION CAMPAIGN IN DECEMBER 1955

South America

Argentina

The work begun in 1948 in the northern and north-eastern parts of the country was interrupted several times. On 30 September 1954 an agreement was signed with the Pan American Sanitary Bureau, and in June 1955 the campaign was resumed on a more intensive and broader scale. Ecological conditions in Argentina are not very favourable for *Aëdes aegypti*, but there are large infested areas in the aforementioned regions and also in the central and south-eastern parts of the country, including the capital.

Bolivia

All of the 65 localities which were initially positive in *Aëdes aegypti* surveys were found negative in the latest checks. Recently, 15 of these localities were checked and the absence of the mosquito was confirmed. According to the standard established for the campaign, *Aëdes aegypti* is considered eradicated from this country.

Brazil

Ths most recent checks confirm the absence of *Aëdes aegypti* throughout the country, including the once highly infested regions in the east and north-east. Surveys are being repeated to confirm eradication. In the past, the yellow fever problem in Brazil represented at least half of that for the whole of the Western hemisphere.

British Guiana

Of the 93 initially infested localities, an area of Georgetown and two localities near the capital which were previously considered *aegypti*-free were again found positive. It is expected that the situation will easily be brought under control, in order that eradication of the vector from British Guiana can be achieved.

Chile

The campaign in this country is in its final stage.

Colombia

Political developments and shortage of personnel have delayed progress of the campaign in this country, where the work should have already reached its final stage. Perifocal application of DDT in the cities and spraying

PROGRESS OF AËDES AEGYPTI ERADICATION CAMPAIGN AS OF 31 DECEMBER 1955
AREAS IN WHICH AËDES AEGYPTI IS STILL PRESENT
AREA DECLARED RECEPTIVE TO YELLOW FEVER BY U. S. PUBLIC HEALTH SERVICE
AREAS IN WHICH AËDES AEGYPTI IS NO LONGER FOUND

against malaria vectors in rural areas have been effective against *Aëdes aegypti*. Of 314 initially positive localities in the country, 5 continued to be infested and 10 were awaiting checks at the end of 1955.

Ecuador

The 337 previously infested localities have been confirmed as negative. The campaign in Ecuador is considered to be in its final stage.

French Guiana

Checks have confirmed the absence of the mosquito in the 55 previously infested localities. On the basis of the reports on the campaign, *Aëdes aegypti* is considered eradicated from French Guiana.

Paraguay

The latest checks by capture in the 98 previously infested localities gave negative results. The campaign is in its final stage.

Peru

The checking programme was interrupted, for lack of funds, in mid-1954, when the 191 previously infested localities were already negative. The campaign is in its final stage, but the situation in areas treated with DDT against malaria must be studied in order to confirm whether *Aëdes aegypti* has been eradicated.

Surinam

A plan of attack against *Aëdes aegypti* has not yet been implemented in Surinam, where infestation indices are known to be high in the principal localities.

Uruguay

The campaign is considered to be in its final stage. The work is being completed in Montevideo, and the 132 previously infested localities in the interior continued to show negative results in the latest surveys.

Venezuela

Following an outbreak of jungle yellow fever in 1954, the anti-*aegypti* work was intensified, principally in the capital, which was threatened by the invasion of the virus. The results of the special measures taken are not yet known, but the *aegypti* index in some sectors of Caracas was quite high. It is hoped that, with available resources, a plan can be established to use the perifocal method to achieve eradication throughout the country. Of 251 localities thus far found with an initially positive index, 147 are negative, 24 positive, and 80 awaiting check.

Central America

British Honduras

Aëdes aegypti were found in only two localities after DDT application against malaria in a large part of the inhabited areas of the country. The final check is to be made during 1956.

Canal Zone

Aëdes aegypti is considered eradicated from the Canal Zone, but there are no statistical reports to confirm this.

Costa Rica

All of the 104 originally infested localities were confirmed as negative in the latest checks. The campaign is in its final stage.

El Salvador

Of the 190 originally infested localities, all have been treated and checked. Only one, the capital, continues positive. The campaign must be extended to all areas of the country where *Aëdes aegypti* might be found.

Guatemala

The 138 originally positive localities were confirmed as negative in recent surveys. The status of the campaign in this country has improved greatly.

Honduras

According to the results of the checks, the 53 previously infested localities continue negative. Certain areas of the country must be investigated before *Aëdes aegypti* can be considered eradicated.

Nicaragua

The 18 localities initially found positive in the entire country continued to be negative in the latest checks.

Panama

All the 41 initially positive localities have been confirmed as negative in recent checks. A final review of the work is to be made in 1956.

Caribbean Islands

Bahamas

The recently initiated campaign has not as yet achieved appreciable results.

Bermuda

After repeated DDT application, *Aëdes aegypti* is considered eliminated from this island, though no statistical data to confirm this are available.

Cuba

Sufficient time has not elapsed to evaluate the results of the campaign initiated in Cuba in March 1954. Havana, where the index was very high, has already been treated twice with DDT, perifocally. The campaign has now been extended to Marianao, Casablanca, Santa Clara, Pinar del Río, Matanzas, Camagüey, and Santiago de Cuba. Infestation of the island is generalized.

Haiti

The first perifocal DDT applications in Port-au-Prince were made irregularly; but in more recent application the work has improved and has resulted in an appreciable decrease in the *aegypti* index. In the rural area near the capital and in small areas in the north-east of the country, residual DDT has been applied against malaria in 585 localities originally infested with *Aëdes aegypti*. Of these, only 395 localities have been checked, 19 of which continue infested.

Dominican Republic

The situation in the capital is not satisfactory, owing to initial technical faults that resulted in resistance of *Aëdes aegypti* to DDT in certain sectors of the city. Steps are being taken to cope with the situation. The work in large areas in the interior continues to progress. A large part of the rural regions is being sprayed with DDT against malaria in a campaign co-ordinated with *Aëdes aegypti* eradication. Of 221 initially positive localities, 10 continue positive and 71 are pending check.

Jamaica

All 14 parishes have infected localities. The campaign must be intensified on this island.

Puerto Rico

The DDT applications against malaria have lowered the *aegypti* index in a large part of the island. Checks made after treatment of the 233 initially infested localities have revealed the continuing presence of the mosquito in 101 localities, including the capital. The campaign on this island must be improved.

Lesser Antilles

Barbados

Of the 95 infested localities, 82 continue positive and 10 are pending check.

St. Croix and other islands

The local health authorities consider *Aëdes aegypti* to be eradicated on St. Croix, but no data to substantiate this are available. Saint Thomas, San Juan, Anegada, Virgen Gorda, Tortola, and Jost Van Dykes continue infested.

Saint Kitts, Nevis, and Anguilla

Investigations on these islands showed 34 localities positive, 18 of which continue infested.

Antigua, Barbuda, Redonda, and Montserrat

High infestation was found on these islands, and a campaign against *Aëdes aegypti* has begun.

Saint Martin, Saint Bartholomew, and Les Saintes

Aëdes aegypti have been found, and a plan of eradication is expected to be implemented.

Désirade, Marie Galante, and Guadeloupe

No specific eradication campaign is being carried out, but the *Aëdes aegypti* indices probably are not very high because of the DDT applications against malaria. Work may be started in 1956.

Martinique

Reports on the campaign on this island indicate that 33 localities were found positive; 6 of these continue positive and 11 have yet to be checked.

Saint Lucia, Grenadines, and Grenada

The initially high infestation indices declined after a programme was started in 1953. In Saint Lucia, of the 50 originally positive localities, 47 were confirmed as negative and 3 continued positive. In Grenada, only one of the 10 initially infested localities continues positive.

Dominica and Saint Vincent

Investigations in 1951 revealed infested areas, which are being sprayed with DDT in a campaign against malaria. Checks indicate that of the 65 initially infested localities in Dominica, 18 continue positive; 13 have not yet been checked. In Saint Vincent, 6 of the 9 positive localities continue infested.

Trinidad and Tobago

High initial indices were found in Port of Spain, San Fernando, and other cities. The appearance of cases of yellow fever in Trinidad in 1954 drew much attention to this island, where *Aëdes aegypti* indices continue to be high, including the semi-rural section near the jungle areas where the yellow fever virus was revealed in monkeys and mosquitos. In Port of Spain the indices dropped to less than 1% beginning on 30 October 1954, according to weekly reports from the director of the medical services; but 77 of the 114 infested localities continue to be positive, and 19 are pending check. Tobago was considered free from *Aëdes aegypti*, but recently the mosquito was found there by the technical personnel of the PASB.

Curaçao, Aruba, and Bonaire

An intensive eradication programme has been initiated, using dieldrin for the first time on walls of houses to combat *Aëdes aegypti*. The *aegypti* indices are high on all three of the islands.

North America

Mexico

When the campaign was interrupted for the second time in August 1955, 159 localities of the 428 originally found positive were still infested. The most heavily infested areas are on the Yucatan peninsula and along the Atlantic and Pacific coastlines. The jungle virus, which is present near the Guatemalan border, is a constantly increasing threat.

United States of America

The yellow-fever receptive area comprises the States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas, as well as that part of Arizona and New Mexico south of a line extending from the north-west limits of Oklahoma to the south-west limits of Arizona and the Mexican border.

According to a study published in 1953,[1] investigations during the Second World War showed that 16 cities had *aegypti* indices ranging from 1% to 21%. In surveys made in 1952, 10 of these cities continued to be positive, and the indices in 4 of them were even higher than before. Twelve additional cities for which no previous data were available were also surveyed in 1952, and 7 of them were found to have indices ranging from 0.5% to 11.3%.

The mosquito is considered eradicated from Key West, Fla., since it has not been found there for two successive summers.

There is now greater interest in the USA in undertaking a campaign to eradicate *Aëdes aegypti*.

* * *

[1] Bradley, G. H. & Atchley, F. O. (1953) *The* Aëdes aegypti *situation in the United States.* In: *Proceedings of the Fortieth Annual Meeting of the New Jersey Mosquito Extermination Association*, Trenton, pp. 104-108

The first figure shows the status of the *Aëdes aegypti* eradication campaigns in some of the countries concerned, and the second shows the areas that are free from this vector and those that are still infested.

The number of countries participating in the *Aëdes aegypti* eradication campaign increased from 4 in 1948 to 20 in 1955; the number of territories, from 0 to 15. Only one country and three territories have yet to join the effort to free the Americas from *Aëdes aegypti*.

MALARIA ERADICATION IN THE EASTERN MEDITERRANEAN AND EUROPEAN REGIONS

In its role as co-ordinator and technical guide in the world-wide programme to eradicate malaria, WHO endeavours to keep abreast of the progress made in individual countries, to evaluate new developments in the light of over-all strategy, and to pass on to the health administrations concerned any information which may aid them in their malaria-eradication efforts. One method by which all of these ends is furthered is bringing together malaria workers from a number of countries to review the situation in their respective areas and to discuss common problems and possible solutions to them. This was the purpose of the WHO-sponsored Inter-Regional Conference on Malaria for the Eastern Mediterranean and European Regions, held in Athens in June 1956.

PRESENT STATUS OF MALARIA IN THE TWO REGIONS

The Conference participants provided data on the prevalence of malaria in their countries and on the progress made in its control. It was pointed out that the figures for malaria morbidity and mortality from different countries are not comparable because of lack of uniform statistical methods from one country to another. For example, in Morocco clinically diagnosed cases are recorded as malaria, whereas in Algeria only cases confirmed by blood examination are recorded. Furthermore, variations may be found in statistics provided by national health administrations as compared with those from national statistical services. The need for more co-ordination and for a single, standardized method for recording statistics was emphasized.

Eastern Mediterranean Region

The total population of the countries and territories of the Eastern Mediterranean Region is about 170 million people, of whom not less than 100 million live in potentially malarious areas. Considerable attention has been given to malaria control by many governments in the Region in recent years, in some instances with aid from WHO ; and, from the figures available, it is estimated that about 26 million persons have already been protected against malaria.

Today, large-scale or nation-wide anti-malaria programmes are either in progress or in the planning stage, with eradication as the goal, in Iran, Iraq, Israel, Jordan, Lebanon, and Syria. In Cyprus, malaria eradication has already been achieved. The annual per person cost of these eradication

programmes ranges from US $0.20 to $0.65, the average being $0.38.

Israel has come near to eradication of the disease after seven years of intensive control measures, and it is believed that success will be realized within the next three years provided that regional co-ordination ensures the prevention of re-infection from neighbouring countries. The cost in Israel has been high, however, because of a number of factors: the presence of several vector species and the resulting long transmission season, the development of irrigation systems and the accelerated rhythm of new building construction, the rapid loss of insecticide from wall surfaces, and the extensive immigration. Such factors have made it impossible to achieve interruption of transmission of malaria by means of a single annual spraying of residual insecticides and have necessitated the application of supplementary measures.

In the southern countries of the Eastern Mediterranean Region, including Sudan, Ethiopia, and Somalia, pilot projects are preparing the way for future eradication programmes by training national personnel and finding solutions to the many technical problems.

Europe

In Europe, only the southern countries are affected by malaria, and these can be grouped as follows with regard to the status of malaria eradication:

(1) countries or areas where eradication can be considered to have been achieved—Italy, including Sardinia and Sicily; Corsica; and Crete (in Greece this achievement has been handicapped by the appearance of resistance in the vectors);

(2) countries which have nation-wide control and are on the way to achieving eradication—Albania, Bulgaria, Portugal, Spain, Romania, and Yugoslavia;

(3) countries where control is being, or has still to be, orientated towards eradication—Algeria, Morocco, and Turkey.

The most spectacular and rapid results have been obtained in Italy and Greece. Events in Greece have provided both a lesson and a warning: the maintenance of control in spite of interruption of spraying has shown that insecticide application may be stopped after some years without the reappearance of malaria; the development of resistance to chlorinated hydrocarbon insecticides in *A. sacharovi* has given a warning that the best weapon against malaria may lose its efficacy. In Italy there has been no sign of resistance to insecticides, and malaria eradication has been virtually achieved even though vector anophelines (*A. labranchiae*, *A. superpictus*, and *A. sacharovi*) still persist in certain provinces.

TECHNICAL ASPECTS OF MALARIA CONTROL IN THE TWO REGIONS

Generally speaking, residual insecticide spraying is effective for the control of transmission of malaria by the various vectors found in the Eastern Mediterranean and European Regions. However, there still exist in some places local conditions which make antilarval measures necessary. For example, in areas where malaria is transmitted by *A. sergenti*, a species not always controlled by residual insecticide spraying. Stress was laid at the Conference on the need for careful study of the bionomics of the various vector species, particularly of elusive vectors such as *A. sergenti* and *A. claviger*, before any specific control method could be considered.

The Conference participants discussed in detail the means of eliminating persistent foci of malaria infection or transmission. Such foci require " emergency " treatment—

total coverage spraying of the locality concerned as quickly as possible, and administration of antimalarial drugs as indicated by the circumstances.

Special difficulties

Difficulties of a practical nature are common in many parts of the two regions because of particular types of dwellings and of certain ways of living. For example, in some areas the absorbent nature of the wall surfaces presents a problem. Another technical difficulty of similar nature is that presented by smoke deposits on sprayed walls. Still another practical difficulty arises from the overcrowding of the houses in some places, which causes the insecticide to be rubbed off the walls.

Movements of population are of concern in malaria control, especially in the Eastern Mediterranean Region where each year about 60 000 people from certain countries where malaria eradication is likely to be attempted, together with travellers from other countries, make the pilgrimage to Mecca and other holy cities of the Islamic faith. At the present time, the Saudi Arabian Government is trying to control malaria in and around the holy cities, to train more personnel for malaria eradication, and to prepare an annual report summarizing the results of malariometric surveys and other relevant work. However, certain measures on the part of the health administrations of the other countries concerned would seem to be in order: The disinfestation of ships, aeroplanes, trains, and motor vehicles used by pilgrims should be carried out at the frontier port or airport receiving the pilgrims, by the health authorities of all governments implementing malaria eradication programmes; and a record of each pilgrim should be kept at the ministry of health of his own country and all such pilgrims kept under observation by a surveillance service, with a blood examination of every pilgrim being carried out once a month during the malaria transmission season and a full course of treatment with chloroquine and primaquine being given to every positive case.

Other population movements to which malaria-control services must pay special attention are those of nomadic groups, of whom there are many in the Middle East; migratory labourers; and the people who temporarily transfer their place of residence from mud houses to tents or huts during the warm season, or from winter premises to mountain cottages, depending on the locality. The problem of tribal movements in relation to malaria control needs further study, particularly with regard to the impregnation of tents with insecticides, drug prophylaxis, blanket spraying of all villages in a given area, and full knowledge of the activity of the tribes.

Still another problem which arises in some countries of the two regions—Syria, Turkey, Portugal, and Greece, for example—is that presented by areas where there are rice fields, which provide all the necessary elements for the breeding of certain species of anopheline mosquitos. Solving the technical difficulties involved in malaria control in such areas calls for full collaboration between agriculturalists, engineers, and malariologists; and, in some cases, special legislation regarding rice cultivation in relation to malaria control may be necessary.

Collective immunity

The question of collective immunity to malaria was considered at the Conference. Fears have frequently been expressed concerning the loss of immunity which might be expected to result from the interruption of transmission and the danger which this would constitute for the community should malaria be reintroduced. It is generally believed that immunity varies from country to country

according to variations in endemicity. It is recognized that there is a certain degree of racial immunity, apparently confined to *P. vivax*, in individuals of Negro stock. Further, there is evidence of some degree of transitional immunity in African infants and perhaps in children in holoendemic areas. While the existence of a true immunity in the absence of parasites is not universally accepted, some may persist for a long period against *P. vivax* and, for a shorter but still considerable time, against *P. falciparum*.

The predominant epidemiological picture in the Eastern Mediterranean and European regions is that of seasonal malaria with comparatively long periods during which no transmission takes place—a condition which would seem unfavourable to the establishment of immunity comparable to that observed in Africa. Serious study of this question is urgently required, but it may be said that the initial observations which have been made in Greece in areas where transmission had been interrupted but where the disease has now reappeared are reassuring. In these areas, cases which have occurred have been mild, shown low parasitaemia, responded easily to treatment, and had a low relapse rate. Epidemics have been localized and of short duration.

It is also of interest that the number of cases of malaria among Greek troops serving in Korea was limited to five or six cases as compared to a much higher incidence among United States troops. However, immunity cannot be regarded as a continuing safeguard, since it is well established that epidemics may arise some five or six years after cessation of transmission if the disease is reintroduced.

Use of antimalarial drugs

Anopheline resistance to insecticides and failure of residual insecticides to achieve the desired results in some instances have led to a re-evaluation of the role of antimalarial drugs. In areas where for any reason the application of insecticides has failed to interrupt transmission, chemotherapy remains the sole auxiliary measure which can be usefully employed. It is important, too, in the treatment of residual cases during the last phase of spraying operations and during the years of surveillance which follow the cessation of spraying.

Experiments in chemotherapy are being conducted in various countries: In Morocco, a striking reduction in malariological indices has been achieved both in endemic areas and during epidemics by the administration of monthly doses of chloroquine or amodiaquine at a dosage of 10 mg per kg of bodyweight, or by doses of pyrimethamine of 25 to 50 mg. And in a trial in Brazil, chloroquine has been distributed to the population by mixing it with common salt, a procedure which is being further investigated in a WHO-sponsored series of controlled experiments.

Surveillance

It was pointed out at the Conference that the process of malaria eradication, which begins with the spraying of insecticides, consists, in its final stages, of surveillance, which is perhaps the most difficult phase. Interest lessens as fear of the disease recedes, and the indifference of the public is matched by the failure of the authorities to understand why requests for funds continue when the transmission of the disease has practically ceased and there remain only a few rare cases of malaria, which it is hard to conceive as being possible sources of a new outbreak of infection. Surveillance consists of detecting these remaining cases and is an absolute essential to gaining the object of eradication.

To give an adequate margin of safety, systematic spraying should be carried out for four years; when spraying is discontinued, surveillance must be fully active. Surveillance

teams are responsible for investigating all cases of fever, within the shortest possible time. Thereafter, therapeutic measures are applied as required; and, if necessary, spraying is recommenced.

Different systems of surveillance have been set up in the countries of the Eastern Mediterranean and European Regions.

In Italy, surveillance is carried out under the direction of the special committees which were previously in charge of spraying operations; any case detected is notified by telegram by the doctor treating the case, blood smears are sent for verification to the Istituto Superiore di Sanità, and an epidemiological investigation is carried out with a view to distinguishing primary cases from cases of relapse.

In Greece, the villages under surveillance are divided into three categories and are visited every ten to thirty days according to the incidence of the disease in the locality. There is also provision for mobile units, one stationed in Athens and one in Salonica, which can be moved to the points where their presence seems to be required.

In Yugoslavia, there is a federal committee composed of one or two malariologists in each republic where malaria still exists. All cases of malaria which come to light must be notified to the head of the malaria service of the republic, and the treatment of patients with mepacrine is compulsory. Spleen- and parasite-rates of children of school age are taken each year in October.

Pakistan has a rural health organization which, with the addition of a few extra workers for taking blood samples and a few microscopists, would be able to carry out proper surveillance operations.

In Iran, the surveillance service is under the technical supervision of the Institute of Malariology and under the administrative supervision of the Malaria Eradication Division of the Department of Public Health. It has one surveillance agent for every 25 villages, which are visited once a month. Blood samples are taken from infants less than one year old and from fever cases. Pyrimethamine is administered to the latter on the spot. For every three surveillance agents there is one supervisor who is responsible for supervising their activities, for sending the collected blood smears to the laboratory, and for seeing that the necessary measures are taken when examination shows a case to be positive.

Surveillance operations are costly. For example, it has been estimated that in Venezuela, where eradication has been practically achieved, the cost of the discovery of a single positive case by the special eradication service is equivalent to US $300.

MALARIA VECTOR RESISTANCE TO INSECTICIDES

One of the principal topics of discussion at the Conference was anopheline resistance to insecticides. The story of the initial observation of insecticide resistance in Greece is now a familiar one: In 1951 in the Peloponnesos, *A. sacharovi* was found in abnormal numbers in premises treated with DDT and did not appear to be affected by contact with sprayed surfaces. Later observations confirmed physiological resistance of this vector not only to DDT, but also to chlordane and BHC, although the last two insecticides had never before been used in the area concerned. Instances of this same resistance were also reported in other Greek provinces in 1952 and 1953; and it became clear, in addition, that DDT spraying was less effective against two other vectors, *A. superpictus* and *A. maculipennis*.

Study of the subject in Greece has shown that there is a progressive increase in the resistance of *A. sacharovi* to DDT from one year to the other within the some area, and that at the present time normal doses of DDT have practically no effect on *A. sacharovi*

and very little on the other two vectors; the efficacy of the action of chlordane on any of the malaria vectors is reduced; and the residual effect of dieldrin seems to persist for not more than from three to four weeks.

From epidemiological observations in Greece at the time resistance first made its appearance, and while it was developing, it would appear that, although the situation is a matter of some concern, it is not as serious as might have been feared; and no definite connexion has been noted between the development by the vector of resistance to insecticides and the distribution of malaria incidence. Even assuming that there were actually ten times as many malaria cases as are brought to light by the existing system of surveillance—that is, 15 000-20 000 cases a year—this would still be far from the 1-2 million cases of clinical malaria which occurred in Greece before DDT was used. There is as yet no exact explanation for the appearance of anopheline resistance in Greece, though various hypotheses have been put forward—e.g., the spraying of marshlands from the air with a reduced dosage rate (12 mg per m^2), the simultaneous use of insecticides for medical and agricultural purposes, and the widespread use of sprays by individuals.

Other cases of anopheline resistance have been reported: *A. sacharovi* proved resistant to DDT in some areas of Lebanon in 1954; *A. sundaicus* displayed DDT-resistance in some small foci in Java, and *A. stephensi* in one area of Saudi Arabia in 1955; and *A. gambiae* showed a high degree of resistance to dieldrin in Northern Nigeria after this insecticide had been used for only 18-24 months.

A number of scientific institutes are now investigating insect resistance to insecticides. Work at the Ross Institute, London, on dieldrin-resistant *A. gambiae* from Nigeria has yielded two important results : (1) polyvalent resistance has been developed to chlordane, dieldrin, aldrin, isodrin, and BHC, but not to DDT and similar preparations; and (2) this resistance has been inherited in accordance with Mendelian principles. It was possible to obtain a clear definition of the Mendelian characteristics and to recognize three distinct types of individual: the susceptible type, the hybrid type, and the resistant type. There was a marked difference between the median lethal concentration (LC_{50}) for each of the groups, and each group could be distinguished from the other by experimental means. These facts show that it might be possible to recognize a small proportion of hybrids in an anopheline population and so foresee the development of resistance, or at all events recognize it as soon as it occurred. The problem of dealing with resistance might thus be simplified to finding the most suitable dose for exterminating hybrids.

The question was raised at the Conference whether it would not be wise to keep certain insecticides in reserve for use only in case of epidemics which could not be overcome on account of resistance developed by local anophelines to the insecticides used up to that time. For example, diazinon has been found effective in Greece for both anophelines and culicines; and, while its residual action is of short duration, its immediate killing effect is so great that it could well be used in an emergency—for instance, during epidemics of malaria in areas where vectors are resistant to the chlorinated hydrocarbon insecticides. Dieldrin has been found effective for three to four weeks against DDT-resistant mosquitos in Greece. Resistance to BHC seems to be less well developed, so that, if a change is to be made to the BHC-chlordane group, it is advisable to select BHC.

In order to find a solution for the control of resistant anopheline species, it is advisable to study the spectrum of susceptibility of anopheline species to various insecticides before any changes are adopted. If this is

not possible within the country itself, outside or international aid should be sought. In this connexion it is probably best to use DDT in the first instance and to change to another insecticide only when DDT fails, selecting the new insecticide on the basis of the spectrum of susceptibility.

It is essential that field checks be made so that the development of resistance may be noted at the earliest possible moment and so that the necessary action may be taken at the appropriate time. If the range of lethal concentrations of insecticide is determined before control operations begin, this can be used afterwards for detecting the presence of resistance. Biological characteristics, density, survival rates, resting and feeding habits, and other pertinent information concerning the vector species should be collected so that any future behaviouristic changes may be detected. Susceptibility tests should be performed in different seasons of the year, as there are indications of the existence of seasonal variations in the susceptibility of anophelines to insecticides.

ORGANIZATIONAL AND ADMINISTRATIVE ASPECTS OF MALARIA ERADICATION

After discussing the malaria situation in each of the countries of the Eastern Mediterranean and European regions, the Conference participants came to the conclusion that malaria eradication was both practicable and advisable in almost all of the areas of the two regions in which malaria is a problem. They proceeded to outline a policy for accomplishing this end.

An eradication scheme is more likely to fail because of lack of preparation or organization, or because of some fault in the administrative machinery, rather than because of a technical breakdown. Prerequisites for embarking on an eradication programme therefore include: (1) a carefully worked out plan, (2) adequate arrangements for putting the plan into effect, (3) official regulations and suitable legislation, (4) provision for a budget covering the operations as a whole, (5) effective government backing, (6) co-operation between all medical and health bodies, both official and private, and (7) education of the general public.

Personnel

The success of a malaria eradication programme, as of any other public health programme, depends to a very large extent upon the quality and the working ability of the personnel involved. The training of such personnel must be given due consideration and teaching institutes created if necessary.

Mention was made at the Conference of a difficulty encountered in malaria-control operations almost everywhere—that of retaining personnel once they have received the necessary training. Arrangements must be made to assure malaria workers of a stable future in the health services. In addition, every effort must be made to bring all public health personnel into the picture of malaria eradication.

Integration into general health services

In countries where the public health services are not yet well developed, the malaria eradication programme may provide a nucleus around which to build such services. It is evident that eradication of malaria will in due course eliminate the need for malariologists and other personnel engaged in this work, and it should be foreseen that these workers will eventually be assigned to other tasks. The Conference participants suggested that it might be useful to call eradication workers " public health workers assigned to malaria ", bearing in mind that any type of disease control is a part of a general public health programme. Training of personnel should be planned from the beginning

with this orientation, and professional staff should always have in view the eventual integration of the malaria programme into that of general public health.

Co-ordination of effort

WHO has recommended that eradication programmes should be planned with a view to the simultaneous eradication of malaria from as large an area as possible, that such an area should preferably be bordered by areas where there is no transmission either naturally or as a result of control, and that, in any case, the plan should always envisage the expansion of the area until it meets such borders. This type of planning requires the co-ordinated effort of neighbouring countries, and the Conference participants devoted considerable attention to this important subject.

Co-operation between countries in malaria eradication means that each country should assume certain responsibilities, including:

(1) an all-out effort to achieve eradication of malaria throughout its territory, with subsequent maintenance of appropriate surveillance and particular attention to border areas;

(2) special consideration and precautions regarding movements across frontiers so that the risk of introduction of infection into malaria-free territories may be avoided;

(3) measures to safeguard inter-country travellers, including pilgrims, from the risk of malaria infection during their journey;

(4) maintenance of reliable malaria statistics and the preparation of antimalaria progress reports, and the free exchange of such information between interested countries;

(5) mutual agreement on quarantine measures when these become appropriate.

Attention was called at the Conference to the advisability of instituting an international, standardized system of recording data. Standardization would enable accurate comparisons of data and costs between different countries to be made, and would facilitate the desired collaboration between countries.

The value of periodic inter-country and inter-regional conferences in promoting malaria eradication was stressed at the Conference, which itself gave adequate evidence of the benefits gained from a discussion of problems of mutual interest and an exchange of scientific information among malaria experts from 18 countries.[1]

[1] Algeria, Ceylon, China, France, Greece, India, Iran, Israel, Italy, Morocco, Nigeria, Pakistan, Portugal, Spain, Turkey, United Kingdom of Great Britain and Northern Ireland, Venezuela, and Yugoslavia. Professor G. Alivizatos (Greece) was Honorary President of the Conference; Professor G. Raffaele (Italy) was Chairman, and Colonel M. K. Afridi (Pakistan), Vice-Chairman; Médecin-Général Inspecteur M. A. Vaucel (France) and Dr Ch. Mofidi (Iran) were Rapporteurs.

POLLUTION OF GROUND WATER

Conclusions Reached at the Fifth European Seminar for Sanitary Engineers

In most European countries, the great majority of the people are supplied, or supply themselves, with water from beneath the ground. Developments of modern civilization—for example, the growth of urban areas, the greater use of water in the home, and the continual expansion of industry—constitute a threat to the quality of this water which it is vitally necessary to counter. Ground water may become polluted with substances such as human excreta, sewage, garbage, manure, fertilizers, industrial wastes, mineral oils escaping from storage or during transport, toxic chemicals sprayed for various purposes, and radioactive substances. The implications for public health are obvious.

Ground water pollution was the principal subject considered at the Fifth European Seminar for Sanitary Engineers, which was held, under the auspices of the WHO Regional Office for Europe, in late July 1956 in Helsinki, and which was attended by participants from 22 countries.[1] To provide background material for the discussions at this meeting, a survey of ground water pollution in Europe and a number of other papers were presented.[2] The following conclusions were drafted by a small committee of the participants under the guidance of Dr A. Key, of the Ministry of Housing and Local Government, London, who later presented them to the full Seminar, where they were discussed, amended, and approved.

[1] Austria, Belgium, Denmark, Finland, France, Germany (Federal Republic), Greece, Iceland, Ireland, Italy, Luxembourg, Morocco, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Tunisia, Turkey, the United Kingdom of Great Britain and Northern Ireland, and Yugoslavia.

[2] A selection of these papers has been published in the *Bulletin of the World Health Organization* (1956, Vol. 14, No. 5-6). See also *Chron. Wld Hlth Org.* 1956, **10**, 156.

General problem of pollution

It has been found that ground water is of excellent bacterial quality over large areas, and this is one of the reasons why it is so widely used for public water-supply purposes. Other reasons are its clarity, its palatability, its freedom from organic matter, its relatively constant temperature, and its reliability summer and winter alike.

Problems of ground-water pollution vary according to the type of ground through which the water must pass. Where the ground consists of highly fissured rocks and coarse gravels which are exposed at the surface, water may pass through without appreciable change in composition. Consequently, if polluted water is allowed to enter the ground, the water drawn from it is also likely to be polluted. The only way of securing that a source of water in such ground shall be of good quality is to establish a protected area within which discharge of polluting matter is prohibited. Where, as is usually the case, absolute protection cannot be achieved, the water should be given appropriate treatment before being supplied to the public; in all such cases disinfection is desirable.

If the ground is impermeable, and provided that the impermeable layer is uninterrupted, extensive enough, and of sufficient thickness, and that any wells through it are properly constructed, nothing deposited on it can endanger the water which may be below. However, such conditions are very rare.

The statements which follow apply to ground which is not highly fissured or formed of coarse gravel and which is permeable to water.

The excellent bacterial and organic quality of ground water indicates, as has been repeatedly demonstrated, that permeable formations possess a capacity for purifying water. This purifying capacity depends on physical, chemical, and biological processes; and, so long as it is not overtaxed, it remains constant. All people who use ground water take advantage, consciously or unconsciously, of this purifying capacity. In an age when mankind is adapting more and more of the resources of nature to his own use, he is following the general trend when he enlists in his service the natural purifying capacity of the ground to its maximum extent.

It is essential, however, to take heed of the fact that, if the purifying capacity of the ground is overtaxed, undesirable phenomena occur, some of which are irreversible. The pollution may not be removed; the pores of the formations may become clogged; the water may pick up iron and manganese, or sulfide; it may become too saline or acquire objectionable tastes; and it may carry disease. Increased demands on the purifying capacity of permeable ground formations must therefore be made with great caution and with full knowledge of the over-all situation, and no one should be lulled into a false sense of security because the undesirable effects are long delayed.

A paper was presented at the Seminar on a quantitative study carried out in the Netherlands on the rate of purification as water passes through fine sand under natural conditions. In the discussion which ensued it was mentioned that parallel investigations are being made with regard to other kinds of soils in Austria, Germany, Sweden, and the USA. It was suggested that WHO might promote collaboration among research workers of different institutes in studies of this kind, which should comprise field work under natural conditions as well as semi-technical investigations of various kinds of soil in containers and of various types of pollution.

Bacterial pollution of ground water is the most important danger, but it is perhaps the most readily removed by filtration through several metres of ground if the interstices are small. Cases have been cited of disease being transmitted by ground water. It is essential for modern civilization that all communities where houses are close together should have either a piped water supply, or a sewerage system carrying human wastes well away from a source of water supply, preferably both. When houses are more scattered, all wells should preferably be on the up-stream side of, and as far away as possible from, any site for sewage disposal. Drawing water from depths well below the water table may also be a contribution to safety, since pollution has a tendency to be greater near the free water surface.

The role of viruses in the spread of disease by ground water has been insufficiently explored.

A water which is bacteriologically safe may still be undesirably contaminated with organic matter from sewage or other sources; this type of matter is not removed as rapidly as the bacteria. Organic matter requires oxygen for its mineralization; and it is better if the oxygen is atmospheric oxygen, which is available in ample quantities only near the surface. Moreover, soil near the surface contains quantities of humus material which is the abode of organisms which can effectively oxidize organic matter. For both these reasons organic matter should be allowed on to the ground only under conditions where it is not carried far below the surface before oxidation is substantially complete. These conditions depend upon the nature of the organic matter, its total amount, and its concentration when applied. For example, it is useless to flood an area of land permanently with an industrial organic waste and hope that it will soak away and be oxidized. Sufficient oxygen would not be available. Cases have been cited of gross ground water

pollution occurring in such circumstances. It should be mentioned that the benefits of the purifying capacity and of the presence of oxygen near the surface are forgone if wastes are discharged directly into the ground water by way of sink holes, pits, or wells.

There are instances in which organic compounds are incompletely oxidized or are incapable of being oxidized at all biologically. Such compounds (e.g., phenols) could convey objectionable tastes to water, or they could conceivably make it actively toxic. The greatest possible care should be taken to prevent such wastes from being discharged on to the land at all, and particularly into the ground by way of seepage pits.

Pollution may penetrate much further into the ground in certain weather conditions—for example, after a period of drought when the soil cracks. The fact that a ground water is usually unpolluted does not necessarily mean that it will always be unpolluted. In using the purifying capacity of the ground it is essential to allow a very considerable factor of safety.

Some polluting substances are not removed in the ground at all. Of these, salts such as chlorides have given the most trouble. The quantities of chlorides discharged into the ground should be so regulated that, after dilution and by the time a source of supply is reached, their concentration will not make the water non potable or unfit for any other essential use.

The practice of artificially increasing the quantity of ground water is growing and has much to recommend it. In some countries it is indeed believed to be essential. It is usual to set aside areas of suitable land on to which river water, for example, is led and allowed to percolate away. The practice raises its own pollution problem unless, as is sometimes the case, the recharge water is itself of potable quality. The chief trouble arises from the presence of suspended matter, which tends to clog the surface, and the difficulty of securing that the oxygen necessary to deal with the organic matter is provided at the place where it can do its proper work. Various means are available to overcome these difficulties, and those suitable to the circumstances should be adopted; otherwise, replenishment schemes may come to a premature end, or the ground water may need treatment after abstraction.

Industrial effluents

The danger of pollution of underground water by industrial effluents calls for a more careful study of the problem of industrial waste disposal, and this was given due consideration at the Seminar.

The use of diffusion wells or seepage pits for waste disposal, though practised to some extent in certain industries, should be looked upon as reasonably safe only in those cases where the receiving aquifer is unfit for other use and there is no possibility of waste finding its way into other water-bearing strata. It should be remembered that wastes disposed of in this way are beyond the control of man and that, once damage has been done, the possibilities of remedy are very remote.

It has been suggested that, before deciding on other methods of disposal, one should study in each individual case the existing possibilities of simplifying the waste problem by in-plant measures such as (*a*) the reclamation of utilizable products otherwise lost in the wastes flow, impairing the quality of the effluent; (*b*) the recirculation of water, as practised, for example, in the pulp and paper industry, in beet-sugar factories, steel mills, etc.; and (*c*) alterations of the manufacturing process. The last need not necessarily be of a revolutionary nature; they may in some cases involve only minor changes which will prove effective from the point of view of pollution abatement. It is not claimed that by such measures the need for waste water treatment will be eliminated. But, if feasible, such measures will reduce the cost

of waste water treatment; and they have, in numerous cases, resulted in a net saving in production costs as well.

The kind of treatment that should be provided for industrial wastes injurious to health obviously varies with the nature of the contaminating material and with the method of ultimate disposal. Toxic wastes should be treated so as to conform to the standards set by the competent local authorities or supervisory agencies. Where such standards do not exist, their introduction should be considered. Infectious wastes may call for precautionary methods of treatment. With the exception of thermal disinfection, as practised in rendering plants for the disposal of animal carcasses, disinfection of these wastes is not the general rule; and this may be unsatisfactory in certain circumstances. Further research is needed on the role of certain industrial wastes in the spread of anthrax and tuberculosis, and industrialists should be made aware that there is a probable danger in the indiscriminate disposal of such wastes.

Special consideration was given at the Seminar to the disposal of the waste waters of the pulp and paper industry, which is of vital importance to the national welfare of Finland, Norway, and Sweden. It has been shown that the large amount of organic material going to waste in this industry constitutes a heavy pollutional load on the receiving waters; and, though not directly injurious from the health point of view, this pollution is of considerable concern. It is recognized that, owing to differences in the size and location of the mills, their working methods, and the limitations of existing waste treatment methods, and to economic considerations, no generally applicable method of solving the waste problem is available to date. Further research on the development of suitable methods is necessary.

In spite of the great efforts made to utilize spent sulfite liquor in other industries, the market requirements for its products are limited and can be satisfied by a small fraction of the entire volume available. Nevertheless, utilization of the soluble constituents of the wood processed in the paper and pulp industry merits more study. The most promising method for solving the waste problem in this industry, as indicated by current experience, appears to be heat recovery by evaporation and burning of the liquors. It is already feasible in areas where fuel is expensive, and is likely to become more economical as a result of further development.

Water economy

Sanitary engineering has an important part to play in sanitation in general and in safeguarding surface water and ground water quality in particular. However, the interests of sanitary engineering, particularly in industrialized countries, are not always in line with, and are sometimes directly opposed to, the interests of those who require more and more water for industry and agriculture; require the use of rivers for navigation, fishing, and recreation; produce ever-increasing quantities of ever more complicated effluents, as well as sewage, and look to the rivers as a means of disposal; or require ground for building towns and factories which would otherwise be available for the collection of ground water. An adequate reconciliation of these conflicting interests, and thus the solution of the water problem, can be found only by taking into consideration the total water economy of a whole river basin or a whole country. Regional and national authorities should bear this in mind. International collaboration is also essential in some cases.

The principal task of any organization dealing with water economy would be threefold:

(1) to set up a balance between the available resources of water and the existing

and foreseeable future requirements for water;

(2) to improve the balance by increasing the available resources and improving their quality by reducing pollution; and

(3) to improve the balance by reducing requirements, which may also reduce pollution.

Some of the methods of increasing water resources which would have to be studied are: the use of impounding reservoirs in the upper parts of rivers for direct supply to water users or to balance the flow in the rivers over the different seasons; the use of storage reservoirs in the lower parts of rivers for the same purpose or to allow purification to take place; and artificial recharge of ground water, a method which may well have an important future as it offers important advantages over open reservoirs. In many areas water resources would be increased by the establishment of more efficient effluent treatment plants. The water in a polluted stream can hardly be said to be "available" for a purpose requiring pure water.

Of the ways in which water requirements may be reduced, the one which might best repay examination is the re-use of water in industry, either by recirculation through a process or by the successive use of water in different processes. This procedure has already proved practicable in some cases; and, at the same time, it may greatly reduce the amount of polluting matter to be finally discharged.

There has been a more or less natural controversy between the interests of industry and of those concerned with the prevention of water pollution, but it is encouraging to note that in some countries industry is now taking a more positive attitude towards the problem of stream sanitation. The Seminar participants felt that the interests of industry and public health in this respect were not irreconciliable, and they therefore suggested that each country should proceed towards the adoption of a national water policy. The Seminar aimed to further this process.

Epidemiological and Statistical Information

MORTALITY FROM CONGENITAL MALFORMATIONS

A report compiled from statistics supplied by a number of WHO Member States provides data on congenital malformations as causes of death.[1] The figures are for the most recent years for which statistics are available, usually for 1951-54. In the report are tables indicating the number of deaths and the death rates by year, according to sex and certain age groups, and the numerical importance of deaths from the principal congenital malformations, according to sex and age.

Table I shows the number of infants in certain countries who were born alive but died from congenital malformations in the first year of life and the number of such

[1] *Epidem. vital Sta Rep.*, 1956, 9, 409-432

TABLE I. INFANT MORTALITY FROM CONGENITAL MALFORMATIONS, 1954

	Number of deaths among infants under 1 year of age	Rate per 100 000 live born
Ireland	406	656
Northern Ireland	175	608
Scotland	519	562
Saarland	102	548
Israel (Jewish population)	222	541
Netherlands	1 151	503
Germany (Federal Republic)	3 839	495
Canada (excluding Yukon and North-West Territories)	2 137	491
England and Wales	3 166	470
West Berlin	81	462
Switzerland	372	444
New Zealand (excluding Maoris)	209	432
Austria	438	421
Denmark	315	412
Italy	3 466	407
Finland	360	401
Australia (excluding full-blood aboriginals) [1]	767	379
United States of America		
All races	15 116	376
White	13 507	391
Non-white	1 609	285
Norway	229	363
France [2]	2 857	354
Sweden [1]	380	345
Union of South Africa (European population) [1]	217	314
Iceland [1]	10	231
Portugal	429	217
Japan	3 466	196

[1] 1953

[2] Preliminary or approximate figures; do not include deaths among babies born alive but dying before registration of their birth, i.e., within a period of 3 days

deaths per 100 000 live births. The data are for the year 1954, with a few exceptions, which are noted.

The wide range of death rates is interesting. The rate in Ireland is more than three times that in Japan. In the USA the rate in white infants is higher than in non-white infants. The rate in Northern Ireland is higher than in Scotland, and the rate in Scotland is appreciably higher than that in England and Wales. These rates should be interpreted with caution because, as the table shows, they are based on a very small number of deaths in some countries or areas; and the rate in such places might therefore be expected to show fairly large variation from year to year. For France, deaths from congenital malformations in infants who, though born alive, die before their birth is registered, are not included in the figures in this table. Since deaths from congenital malformations are concentrated in infancy (indeed, about half the deaths occur within the first four weeks of life), it can be appreciated that deaths from congenital defects before birth is registered are not insignificant in number. Another factor to be considered is whether the medical certification of death is comparable in the countries considered so that the likelihood that death due to such causes is recognized and recorded on a certificate is approximately equal in each of the areas shown in the table. While one may suspect that medical certification in this respect is, in fact, not comparable from one country to another, one cannot estimate from national statistics what variation there may be.

It may appear that relatively few out of every 100 000 infants born alive die from congenital defects within the first year of life, but it should be remembered that such malformations are the cause of a great many still-births. Even in considering the fate of infants born alive, malformations are one of the leading causes of death in infancy, especially now that many of the other causes, such as diarrhoea and pneumonia, have been, or are being, controlled by advances in medicine and public health.

Moreover, not a few deaths take place

after the first year of life. The WHO report shows that congenital malformations cause, on the average, about one-sixth of deaths from all causes during the first year of life in the countries studied. The actual proportion differs to a greater or lesser extent from country to country, perhaps not only because of a real difference in the risk of death from this condition and other reasons already mentioned, but also possibly because a large number of deaths from causes such as diarrhoea and pneumonia, for example, reduces the proportion of deaths which are caused by malformations.

The report analyses the kinds of congenital malformations that have led to death. In the countries studied, congenital malformations of the circulatory system have, in recent years, accounted for about one-third to one-half of the deaths under one year of age from congenital malformations of all kinds. The second most important defect in this period of life is usually spina bifida and meningocele, although in some countries malformations of the digestive system rank second. The death rate from malformations of all kinds is usually higher in male infants than in female infants, which is true of most diseases and which certainly applies to malformations of the circulatory and digestive systems. Monstrosity and spina bifida and meningocele are exceptions, however.

Congenital malformations have been the subject of much inquiry in recent years. Formerly the subject was viewed perhaps rather pessimistically, since not much was known about causation and therefore prevention, except that heredity was thought to play a part in certain types of malformation. The discovery that if a mother has German measles in early pregnancy the foetus may be malformed not only showed that some malformations might be prevented through attention to the mother during pregnancy, but also stimulated efforts to find if there were other causes which could be controlled. Knowledge has been accumulated which suggests that the risk is greater in babies born of older mothers, or of mothers who are poorly nourished or diabetic, for example. All of these offer practical suggestions for prevention. However, on the whole, the causes of congenital malformations are still poorly understood.

This WHO report on congenital malformations as cause of death provides data on another aspect of a subject of which the study may prove rewarding.

GENERAL VITAL STATISTICS

A recent issue of the WHO *Epidemiological and Vital Statistics Report* [1] devoted to general vital statistics gives the natality, general mortality, infant mortality and neonatal mortality rates recorded in a number of countries and territories (or, in some cases, in large cities) during the years 1951-55. The rates are compared with the corresponding averages for the years 1936-38.

These statistical data not only show the trend of vital statistics over the last five years, but also give a general idea of the level of health in the countries considered. Indeed, mortality rates—and especially rates of infant mortality—to some extent reflect general conditions in a country as regards health and social conditions.

Natality

During the period 1951-55, there was a slight over-all decrease in natality (see Table I), although in most cases the rates were still distinctly higher than in 1936-38. Generally speaking, the rates for 1955 differ little from those for 1954; and a tendency to

[1] *Epidem. vital Statist. Rep.*, 1956, 9, 457-508. This issue also contains statistical tables showing the sex and age distribution of morbidity and mortality due to poliomyelitis during the last few years.

TABLE I. NATALITY AND GENERAL MORTALITY IN SELECTED COUNTRIES, 1936-38 AND 1951-55

Crude rates per 1000 population

Country, territory, or city	Natality						General mortality					
	1936-38	1951	1952	1953	1954	1955	1936-38	1951	1952	1953	1954	1955
Union of South Africa [a]	24.7	25.0	25.2	25.7	25.5	25.5	9.7	8.8	8.2	8.9	8.7	8.5
Canada [b]	20.2	27.2	27.9	28.2	28.7	28.3	9.9	9.0	8.7	8.6	8.2	8.1
Chile	32.3	31.3	32.0	34.6	34.3	35.0	23.5	15.2	13.2	12.6	13.1	12.8
Mexico	43.5	44.6	43.8	45.0	46.4		23.6	17.3	15.0	15.6	13.1	
United States of America	17.2	24.5	24.7	24.7	25.0	24.7	11.1	9.7	9.6	9.6	9.2	9.3
Venezuela [c]	33.1	43.8	43.7	46.1	46.8	47.1	18.0	11.1	10.8	9.9	10.1	10.2
Ceylon	35.9	40.5	39.5	39.4	36.2	37.9	21.5	12.9	12.0	10.9	10.4	11.0
India [d]	33.9	24.9	24.8	26.7	28.4	30.5	22.6	14.4	13.6	15.0	13.2	12.7
Israel [e]	27.4 [f]	32.7	31.6	30.2	27.4	27.3	8.2 [f]	6.4	6.7	6.3	6.4	5.8
Japan	29.3	25.4	23.5	21.5	20.1	19.4	17.4	10.0	8.9	8.9	8.2	7.8
Austria	13.2	14.8	14.8	14.8	14.9	15.5	13.5	12.7	12.0	12.0	12.1	12.1
Belgium	15.4 [g]	16.4	16.7	16.6	16.8	16.8	12.9 [g]	12.6	11.9	12.1	12.4	12.7
Denmark	18.0	17.8	17.8	17.9	17.3	17.3	10.7	8.8	9.0	9.0	9.1	8.8
Finland	20.0	23.0	23.1	21.9	21.4	21.1	13.3	10.0	9.5	9.6	9.1	9.3
France	14.9	19.6	19.3	18.8	18.9	18.5	15.3	13.4	12.3	13.0	12.1	12.1
Germany :												
Federal Republic		15.8	15.7	15.5	15.7	15.7		10.5	10.5	11.0	10.4	10.8
West Berlin		9.0	8.3	8.1	8.0	7.8		12.4	13.1	13.0	13.9	13.9
Ireland	19.4	21.2	21.9	21.3	21.1	21.2	14.4	14.3	11.9	11.8	12.1	12.6
Italy	23.0	18.5	18.0	17.8	18.3	18.1	14.0	10.3	10.1	10.0	9.3	9.3
Luxembourg	15.1	15.0	16.1	15.9	16.3	16.1	12.0	11.7	12.0	12.5	11.4	11.3
Netherlands	20.2	22.3	22.4	21.8	21.6	21.4	8.7	7.5	7.3	7.7	7.5	7.6
Norway	15.0	18.4	18.8	18.8	18.6	18.7	10.2	8.4	8.5	8.5	8.4	8.3
Portugal	27.1	24.5	24.7	23.4	22.7	23.6	15.8	12.4	11.8	11.3	10.9	11.3
Spain [g]	22.4	20.0	20.7	20.4	19.9	20.4	18.2	11.5	9.6	9.6	9.0	9.3
Sweden	14.5	15.6	15.5	15.4	14.6	14.8	11.8	9.9	9.6	9.7	9.6	9.4
Switzerland	15.3	17.2	17.4	17.0	17.0	17.1	11.4	10.5	9.9	10.2	10.0	10.1
United Kingdom :												
England and Wales	14.9	15.5	15.3	15.5	15.2	15.0	12.1	12.5	11.3	11.4	11.3	11.7
Scotland	17.8	17.7	17.7	17.8	18.0	18.0	13.3	12.9	12.0	11.5	12.0	12.0
Northern Ireland	20.1	20.7	20.9	20.9	20.8	20.8	14.4	12.8	10.8	10.7	10.9	11.0
Yugoslavia	27.9	27.0	29.8	28.4	28.4	26.9	15.9	14.2	11.8	12.4	10.8	11.4
Australia [h]	17.3	23.0	23.3	22.9	22.5	22.6	9.5	9.7	9.4	9.1	9.1	8.9
New Zealand [i]	17.3	24.4	24.8	24.1	24.6	24.9	9.2	9.6	9.3	8.8	9.0	8.9

[a] European population
[b] Excluding the Yukon and Northwest Territories
[c] Excluding tribal Indians
[d] Registration area
[e] Jewish population
[f] Former Palestine territory
[g] Excluding children born alive but dead before registration of their birth, i.e., within three days in Belgium and 24 hours in Spain
[h] Excluding full-blood aboriginals
[i] Excluding Maoris

stabilization of the natality level can be observed. Of the 45 countries and territories for which data are given in the *Report*, 22 show a decrease in the natality rate between 1954 and 1955, 17 show an increase, and for six the rate was stationary.

TABLE II. INFANT MORTALITY IN SELECTED COUNTRIES, 1936-38 AND 1951-55

Deaths of infants under one year, per 1000 live-born of the corresponding period

Country	1936-38	1951	1952	1953	1954	1955
Canada [a]	68	38	38	35	32	
Chile	243	149	134	114	124	
Mexico	130	99	90	94	80	
United States of America	54	28	28	28	27	27
Ceylon	161	82	78	71	72	
Israel [b]	62 [c]	39	39	36	34	32
Austria	88	61	52	50	48	45
Belgium	83	50	45	42	49	49
Denmark	64	29	29	27	27	25
Finland	67	35	32	34	31	30
France	71	51	45	42	41	39
Germany :						
Federal Republic		53	48	46	43	42
West Berlin		49	49	56	51	46
Ireland	71	46	41	39	38	37
Italy	105	67	63	58	53	49
Luxembourg	73	42	42	42	44	39
Netherlands	38	25	22	22	21	20
Portugal	143	89	94	96	86	91
Spain [d]	119	63	55	53	48	50
Sweden	44	22	20	19	18	17
Switzerland	45	30	29	30	27	26
United Kingdom :						
England and Wales	56	30	28	27	25	25
Scotland	77	37	35	31	31	30
Northern Ireland	76	41	39	38	33	32
Yugoslavia	139	140	105	116	102	
Australia [e]	39	25	24	23	22	22
New Zealand [f]	33	23	22	20	20	20

a Excluding the Yukon and Northwest Territories

b Jewish population

c Former Palestine territory

d Excluding children born alive but dead before registration of their birth, i.e., within 24 hours

e Excluding full-blood aboriginals

f Excluding Maoris

As regards natality, the countries in question may be roughly divided into three groups:

(1) Countries with a *high natality*, where the rate is above 30 per 1000 population. It will be noted that there is no European country in this group, which is headed by Venezuela with a rate of 47.1 in 1955 (as against 33.1 in 1936-38), followed by Mexico with 46.4 in 1954 (as compared to 43.5 in 1936-38), Ceylon with 37.9 in 1955 (35.9 in 1936-38), Chile with 35.0 (32.3 in 1936-38) and India with 30.5 (33.9 in 1936-38).

(2) Countries with a *medium natality*, where the rate is between 20 and 30 per 1000 population. This group includes several European countries—Spain, Finland, Ireland, Northern Ireland, the Netherlands, Portugal, and Yugoslavia, and all the extra-European countries except Japan.

(3) Countries with a *low natality*, where the rate is below 20 per 1000 population. This group includes Japan, where the natality rate is decreasing rapidly, and the European countries not mentioned in group 2.

General mortality

An examination of the general mortality rate (see Table I) clearly shows that, in spite of a few variations from year to year, the tendency to a decrease in general mortality has continued in most of the countries considered. There seems to be a certain stabilization, however, following the large decrease in mortality recorded after the war, which was connected, in particular, with the introduction of antibiotics.

A comparison of the rates for 1955 with those for 1954 in the 45 countries and territories considered shows that mortality has increased in 18 of them, has slightly decreased in 22, and has remained stationary in 5.

Infant mortality

As regards infant mortality, which is the most sensitive index for measuring the degree of health and social protection in a community, Table II shows an appreciable decrease in rates for the years 1951-55 as compared with 1936-38 in nearly all the countries considered. The year 1955 marks a new record. As in the preceding years, Sweden leads, but with a rate of 17 per 1000 live-born, which is the lowest ever recorded in the whole world; it is followed by New Zealand and the Netherlands with a rate of 20, and Australia with 22.

In some countries, on the other hand—among which are Chile, Ceylon, Mexico, Portugal, and Yugoslavia—infant mortality is still quite high, although it has greatly decreased since 1936-38.

* * *

To sum up, as the random fluctuations in the rates for the period 1951-55 were relatively slight, the simultaneous decrease in general mortality and infant mortality is a significant indication of the gradual improvement in health conditions in most countries. The demographic balance, which was largely adverse during the Second World War, improved remarkably during the period under consideration. Nevertheless, the wide differences which still exist between the rates in different countries—in particular with regard to the infant mortality rates—suggest that further progress can be made in the years to come.

Reports of Expert Groups

INSECTICIDES AND EQUIPMENT FOR THEIR APPLICATION

In the numerous campaigns undertaken throughout the world against insect-borne diseases, various types of spraying and dusting apparatus have been used on an ever wider scale in recent years. It is anticipated that their use will continue to increase, and the success of future campaigns will depend in a large measure on the quality, durability, and efficiency of such equipment. It is for this reason that the WHO Expert Committee on Insecticides has thoroughly reviewed, in the light of field experience, the specifications which it established in 1950 and 1951 for three types of apparatus: compression sprayers, stirrup-pump-type sprayers, and hand-carried, hand-activated, plunger-type dusters. The revised specifications are contained in the sixth report of the Committee.[1]

Since insecticide equipment is destined to be used intensively and sometimes under very difficult conditions, it is important that it always be maintained in perfect working order. The report gives full details regarding maintenance and repair of sprayers and dusters and includes a list of spare parts which should be supplied with them. It also includes information on the characteristics and efficiency of fogging and misting machines and suggestions for their use.

The utilization of highly toxic insecticides tends to increase the risks to which persons handling or applying such products are exposed, and an important section of the report is devoted to this subject. It indicates the rules to be followed and the protective measures to be taken, such as the wearing of special clothing and the use of special devices by persons engaged in spraying operations or in preparing insecticide solutions and suspensions.

The report describes the impregnation of clothing and bedding with insecticides, a method which could probably be applied also in treating the tents of nomadic peoples in malarial regions.

Other subjects covered by the report are: standardization of equipment; improvements which could be introduced to meet local requirements; equipment for the application of molluscicides in bilharziasis-control programmes; and equipment for the disinsectization of aircraft. Finally, there are recommendations for research on a number of problems.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1956, 110. 88 pages. Price: 3/6, $0.60, or Sw. fr. 2.—. Published in English, French, and Spanish.

TOXIC HAZARDS OF PESTICIDES TO MAN

In June 1956, WHO convened a study group on the toxic hazards of pesticides to man—a problem which, with the widespread and ever-growing use of these substances to control vectors of disease and to safeguard crops, has assumed increasing importance in recent years and has become a matter of considerable concern to health authorities in many parts of the world. The report of this group, which was composed of experts with specialized knowledge of the toxicity of pesticides on the one hand and of their practical use in agriculture and public health work on the other, has just been published

in the WHO *Technical Report Series*.[1] The report is, in effect, an extension of the monograph prepared by Dr J. M. Barnes—a special consultant appointed by WHO in 1952 to study the whole question of the toxicity of pesticides.[2] In the group's report, the situation is reviewed in the light of present knowledge, certain recommendations concerning the safe use of pesticides are made, and some lines for future research are suggested.

The group, in introducing its report, mentions one particular field in which it felt that it should make certain specific proposals:

> The urgency of the race between the use of insecticides in public health and the evolution of resistant strains of insects has been emphasized in the statements of the Director-General to the Ninth World Health Assembly in 1956. In particular, those responsible for malaria-control work may find it necessary in the near future to use new types of insecticides, which bring in their train new potential hazards to those applying them. The Group, therefore, considered in some detail the recommendations that might be made to enable more toxic insecticides of all kinds to be used safely in public health work.

The group then proceeds to define the term " pesticides ":

> In the Group's work, the term " pesticides " has been limited to include only insecticides, fungicides, molluscicides and herbicides, with passing reference to rodenticides. Poisons and operations designed to kill other pests, e.g., wild animals, have not been considered.

The report proper begins with a discussion of the toxic properties of pesticides. It is pointed out that while it is essential to have some knowledge of the toxicity of a compound before using it in the field, toxicity itself is not necessarily a measure of the health hazard involved, being the ability of a material to cause harm rather than the probability that it will do so. For this reason, the importance of carrying out field investigations—measurement of pesticide concentrations in air under operational conditions; estimation of skin contamination of operators; testing of protective clothing; clinical examination of workers—as well as laboratory tests of toxicity is stressed.

A review of the incidence and nature of poisoning follows. Here, the clinical signs of poisoning are described and laboratory methods for detecting the presence of pesticides in body tissues and fluids are discussed. This section ends with some suggestions for future studies, and a recommendation that WHO should continue to prepare and distribute bibliographies on the toxicology of pesticides.

Turning then to the more immediate and practical problem of the measures to be taken to protect pesticide operators, the report emphasizes the importance of distributing information on hazards to all workers handling pesticides and describes in detail both the general precautions to be observed by all spray operators and the special precautions necessary when dealing with the more toxic materials, such as dieldrin and the organo-phosphorus compounds, and when carrying out aerial spraying operations.

The report goes on to deal at some length with the question of the contamination of food and water with pesticides, the introductory paragraphs to this section explaining clearly the scope of the discussion:

> The Group confined its discussions to those situations where it was felt that a real hazard might arise from the deliberate or accidental addition of pesticides to drinking-water or food supplies. No attempt was made to assess the hypothetical hazards that might arise from the presence in food of residues of pesticides that would result in a daily intake by men of amounts far below the amount believed capable of causing obvious signs of intoxication. The possibility that a syndrome of long-term intoxication may be recognized was considered, but it was agreed that primarily the Group should confine its attention to those situations in which an obvious hazard of poisoning might arise.
>
> The Group considers that whenever treatment of a foodstuff with a pesticide is essential from the economic or public health point of view, such treatment should, because of the possibility of endangering the health of consumers, be carried out with the minium dose necessary to obtain the desired effect.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1956, 114. 51 pages. Price : 3/6, $0.60, or Sw. fr. 2.—. Published in English, French, and Spanish.

[2] Barnes, J. M. (1953) *Toxic hazards of certain pesticides to man*, Geneva (*World Health Organization: Monograph Series*, No. 16)

The Group feels that special attention should be paid to the possible contamination of basic foodstuffs which are continually consumed, e.g., milk, flour and products derived therefrom (bread, macaroni, spaghetti, etc.), meat, fats, water, etc.

In connexion with the application of pesticides for vector control, the problem arises of the possible deleterious effects of these substances on the health of livestock. This problem is considered briefly in the next section of the report, the group's observations being limited, however, to the effects on domestic animals and fish of certain pesticides used for malaria, onchocerciasis, and bilharziasis control—only a relatively small aspect of the general problem of the toxicity of pesticides to livestock.

The final section of the report is devoted to a discussion of regulations for the prevention of hazards during the manufacture, handling, and application of pesticides and for the control of pesticide residues in food. The group's opinion on the question of residues in food supplies is summed up in the closing paragraph.

The Group is unable to consider setting up safe limits for pesticides in food, nor does it feel able to recommend that WHO should undertake such a task. However, the Organization might, with the assistance of its expert panels and committees, advise countries on what it thought might be dangerous or undesirably high levels in particular circumstances.

There are three annexes to the report: the first presents the results of a questionnaire which was sent to several laboratories carrying out research on the vertebrate toxicology of pesticides to find out the number and type of staff engaged on such work and the kinds of investigation pursued; the second reviews briefly some studies made to determine the degree of exposure of workers to insecticides; and the last gives recommendations for the design and use of respirators and dust masks for protection against pesticides.

Notes and News

Regional Training Course for Waterworks Operators

From 1 to 30 September 1956, the School of Sanitary Engineering of Mexico's Universidad Autónoma held a short training course for staff engaged in waterworks' operation. This was the third course of the kind that has been organized in the WHO American Region with the help of the Organization, and Mexico was providing the facilities for the first time, following the recent conclusion of an agreement for WHO to give the School of Sanitary Engineering technical assistance.

The course was attended by selected staff from Cuba, Haiti, the Dominican Republic, and Mexico, all of whom received fellowships for the purpose. Two engineering consultants, also provided by WHO, helped to organize and run the course. The aim was to give the fellows a sound technical training, comprising theoretical instruction, laboratory work, and field visits (in Mexico) and covering all important aspects of the running of the various types of water supply system (filtration plants, pumps, chlorination, fluoridation, etc.).

A further one-month's special course was arranged for the best eight fellows attending the earlier course to fit them for work as instructors or supervisors in the training of local staff.

The engineering consultants will be available during the month of November for visiting, upon request of the governments, the countries from which the fellows were drawn, for the purpose of giving further practical instruction on the spot.

Courses for Sanitation Personnel

Paraguay

Paraguay's first course for sanitary inspectors opened in Asunción on 1 June 1956 and will last until the end of the year. The Pan American Sanitary Bureau (WHO Regional Office for the Americas) and the Servicio Cooperativo Interamericano de Salud Pública (SCISP) co-operated with Paraguay's Ministry of Health and Social Welfare in setting this course afoot.

The 22 students attending the course have had four months of formal training in Asunción, after which comes three months' field training at the San Lorenzo health unit. On successful termination of the course, which is more advanced than that previously given for guardas sanitarios, the students will be appointed to health units operated by the Government with PASB/WHO and SCISP assistance. A special feature in the selection of entrants was that candidates had to be fluent in the Guaraní language so as to be able to speak freely with the rural population, in addition to meeting the normal general and technical admission requirements.

Dominican Republic

The second course for sanitation officers, held in the Dominican Republic's National Laboratory of Public Health, started on 4 June 1956 and will also go on to the end of the year. International consultants provided by PASB/WHO helped the Secretary of State in drawing up the programme. The course is to train students, to the number of 30, who will afterwards staff the Ciudad Trujillo health unit, serve to extend the work of the San Cristobal health unit to cover neighbouring rural areas, or to develop services in Santiago de los Caballeros.

Seminar on smallpox eradication

The Pan American Sanitary Bureau, which serves as the WHO Regional Office for the Americas, is working towards elimination of smallpox from the territory it covers. The final aim is to have the entire population protected against the disease by vaccination, and initial efforts have gone towards getting into production a vaccine of high quality, capable of standing up to adverse conditions of climate and to transportation.

With this end in view, the Organization has been giving technical assistance to national laboratories in the Region, in the form of equipment, expert advice, fellowships for national technicians, technical information, and facilities for testing vaccines for potency and innocuity. Specialists to help in organizing and executing vaccination campaigns have been made available to some countries as well.

The stage was reached earlier this year, however, where it was thought that a meeting of the national professional staff responsible for vaccine production and control was likely to be of value, by providing an opportunity for exchange of information and experience. The PASB accordingly arranged for a seminar to be held in Lima, Peru, from 19 to 25 August 1956.

The main topics laid down for discussion were: (1) production of glycerinated calf vaccine; (2) production of chick embryo vaccine; (3) production of dried vaccine; (4) potency and innocuity tests; (5) experience with chick and dried vaccines in mass vaccination; and (6) laboratory methods for the diagnosis of smallpox.

Round-table discussion was selected as the most appropriate method of working towards the desired results, namely, virtual standardization of techniques used within the Region for the production and control of vaccine, increased knowledge of laboratory methods for diagnosing smallpox, and an evaluation of the results obtained from the various types of vaccine in use. Practical demonstrations were also arranged by some of the special consultants present.

Nursing Seminar in South-East Asia

A South-East Asia Regional nursing seminar, sponsored by the World Health Organization, was held in New Delhi in August of this year. During the three-week

meeting, thirty-three nursing leaders from Burma, Ceylon, India, Indonesia and Thailand discussed the nursing problems common to the countries of the Region, within the wider context of public health services in general. The major aspects selected for study were: (*a*) selection and preparation of ward sisters, with special emphasis on in-service education; (*b*) the role of the ward sister in the development of team work in hospital nursing services; (*c*) categories and functions of the auxiliary; and (*d*) integration of public health aspects of nursing into the basic nursing curriculum. The Seminar's conclusions are expected to be of value to the governments and the Organization in drawing up future programmes for improving nursing care and services in this part of the world.

The Seminar took the view that development of team-work is essential to the building-up of health services in the Region and that more attention should be given to planned programmes in hospitals and other community services, designed to achieve this objective. The ward sister occupies a key position in this respect—as leader of the ward nursing team, nursing instructor and member of the wider health team. Hence, she must be persuaded of the value of team-work and be trained to assume her leadership role. To this end, the Seminar recommended that instruction in the principles of supervision and team-work be included in the basic nursing curriculum and, further, that the ward sister's available time for nursing duties proper be increased by allocating certain functions now generally assigned to her to non-nursing personnel. Another useful measure advocated is adequate representation of nurses on selection boards for the appointment of ward sisters.

As regards the training of auxiliary staff, the Seminar was generally agreed that institutions should provide appropriate pre-service and in-service training courses; this would, at the same time, serve to relieve busy ward sisters of some of the responsibility for this work.

On the use of less intensively prepared personnel for routine and less skilled aspects of nursing, the Seminar recognized that health services must continue to utilize such staff. It nevertheless expressed anxiety over the increasing number and variety in use in the Region and suggested that a single category might be created, with the designation of "auxiliary nurse midwife". The functions of the auxiliary nurse midwife were visualized as those of a health teacher, midwife and nursing assistant, working under the direct supervision of a professional nurse and as a permanent member of the nursing team. A study to determine what specific functions might safely be entrusted to her and the type of organization that would be needed might usefully be carried out.

The Seminar agreed, too, that public health should be made an integral part of nursing training and that all schools of nursing should strengthen themselves in this respect. The objectives should be to develop on the part of the nurse an awareness and understanding of the socio-economic background of the patient as affecting his health, and the training of the kind of nurse capable of fulfilling her essential function and at the same time of taking an active part in bettering public health in her country.

In inaugurating the meeting, Rajkumari Amrit Kaur, India's Health Minister, characterized nursing as one of the oldest of all humanitarian services; she saw it as pre-eminently a vocation. The twentieth century's rapid strides in medical science and acceptance of the right of the common man to good health had, she said, restored to nursing its full scope—conservation of both mind and body, as well as care of the sick. While the widening of the nursing sphere had been definitely related to progress in medicine and public health, yet it was the nurse, the midwife and the health visitor who determined the extent to which the benefits of medical science reached out into the homes of the people. Nursing, she concluded, was therefore essential to the vitalization of the health programme, more especially in rural areas; and that was, at one and the same time, a tribute and a challenge to nurses.

Salmonella strains used for rat control

The World Health Organization has received comments concerning the summary of the discussions published in the *Chronicle* for July-August 1954 (Vol. 8, No. 7-8) on the technical discussions held during the Seventh World Health Assembly. These comments relate to the opinion expressed in the group on zoonoses on the use of certain strains of *Salmonella* for rat control purposes (page 232).

In order to avoid any misunderstanding regarding the status of this summary, it is felt advisable to point out that the informal exchanges of views at the technical discussions held during the World Health Assembly do not necessarily represent the official opinion of the World Health Organization and cannot therefore be interpreted as a recommendation from the Organization to health administrations or other interested bodies or persons, regarding, in the case under consideration, the use of *Salmonella* strains for rat control purposes.

Expert Committee on Health Laboratory Methods

In late October 1956, an expert committee was convened by WHO to consider the problems connected with the establishment of public health laboratory services. Members of this committee, called the Expert Committee on Health Laboratory Methods, gave reports on the existing services in their own countries and discussed topics such as the functions of the public health laboratory services and their role in the health programme, and the organization of these services according to the stage of development of a country. The Committee also considered such practical problems as staffing of public health laboratories; general requirements with regard to space, ventilation, furniture, and equipment; disposal of infected material; protection against laboratory specimens; and the collection, transport, and registration of laboratory specimens. Information on laboratory design and equipment and plans for different types of laboratories were studied.

The Committee was composed of the following: Professor R. E. Bader, University of Tübingen, Tübingen, Germany; Dr T. Bauer, Communicable Disease Center, Chamblee, Ga., USA; Dr R. Buttiaux, Institut Pasteur, Paris, France; Dr P. Tomasic, Central Institute of Hygiene, Zagreb, Yugoslavia; Dr G. Tunevall, Karolinska Institute, Stockholm, Sweden; Dr R. Turner, Government Pathological Laboratory, Cape Town, South Africa; and Dr G. S. Wilson, Public Health Laboratory Service, London, England.

Expert Committee on Biological Standardization : Tenth Session

The tenth session of the Expert Committee on Biological Standardization took place in Geneva from 8 to 13 October 1956.

As the successor of the Permanent Commission on Biological Standardization which, from 1924 onwards, supervised international biological standardization on behalf of the Health Organization of the League of Nations, the present Committee had a long tradition to live up to when faced with the many problems on its agenda. Among the subjects discussed were the efforts that have been made to establish a sound basis for the standardization of vaccines (pertussis, typhoid, cholera, rabies); various sera, including diagnostic sera (influenza, poliomyelitis, syphilis, typhoid, paratyphoid, rhesus) and antivenins; and proposed standards for a series of antibiotics and for pyrogens.

The Committee lamented the sudden death of Dr E. M. Lourie, its secretary since 1952.

The following members attended this meeting: Dr M. L. Ahuja (India); Dr A. do Amaral (Brazil), Vice-Chairman; Dr E. Grasset (Switzerland); Dr J. H. Humphrey (United Kingdom of Great Britain and Northern Ireland); Dr M. Kitaoka (Japan); Dr O. Maaløe (Denmark), Chairman; Dr A. A. Miles (United Kingdom of Great Britain and Northern Ireland); and Dr G. Penso (Italy). Dr R. Murray, Director of the Division of Biological Standards of the National Institutes of Health, Bethesda, Md., USA, acted as temporary adviser for this session.

Regional Committee for Africa

The sixth session of the Regional Committee for Africa was held in Luanda, Angola, from 24 to 29 September 1956, following an invitation from the Portuguese Government. Dr Jorge Janz (Portugal) and Dr J. J. Du Pré LeRoux (Union of South Africa) were appointed Chairman and Vice-Chairman respectively. Among those attending were delegates and representatives of the following countries: Belgium, France, Liberia, Portugal, Union of South Africa, United Kingdom, Gold Coast, Federation of Nigeria, Federation of Rhodesia and Nyasaland, and Sierra Leone, as well as a UNICEF representative and a few representatives of inter-governmental and non-governmental organizations.

In common with the other Regional Committees, the Committee for Africa was called upon chiefly to consider the annual report of the Regional Director on WHO's work in the Region during the past year and the programmes and budgets for the years 1957 and 1958. Subjects of outstanding interest that came up for discussion in connexion with the programmes included: the development of mass campaigns (often on a continental scale) against the major endemic communicable diseases of leprosy, yaws, and tuberculosis, and intensification of malaria control work; preparation of the Regional countries' reports as part of the world health situation survey; and the importance of giving priority to public health work in the planning of national development programmes. In connexion with organizational studies on programme planning, the Committee dealt chiefly with the question of regionalization and decided to take up the matter more fully in 1958 when the views and suggestions of governments are expected to be available, with the object of drafting a report. The regular technical discussions were devoted to the subject of practical public health measures for tuberculosis control in Africa, in recognition of the need for forceful action against this disease.

The Regional Director's report reviews the period from 1 July 1955 to 30 June 1956. The WHO programmes for this period comprised a total of 54 projects, covering such widely varied activities as assistance to 31 country programmes on major health problems; four inter-country malaria or tuberculosis control projects; the planning of conferences, seminars, or courses on malaria, yaws, environmental sanitation, rabies, nutrition, and cancer (some in collaboration with other agencies); work on surveys of such problems as insect resistance to insecticides, bilharzia, fluoridation of water, hazards of certain pesticides to man, and local health services and community organization and development; and collaboration in research work. In the same period, the Regional Office expanded its education and training work by awarding a total of 146 fellowships for study abroad, the majority relating to public health administration and communicable disease control. Twenty-seven countries or territories of the Region benefited from this programme.

In discussion of the Organization's health plans for 1957 and 1958, some interesting facts were brought out. Up till now, WHO's main action in the Region has been directed against the major endemic diseases; this year, for instance, 90% of its regional allocation of funds for field work is being devoted to this end. And the same trend is still strong in the programmes approved for the years 1957 and 1958. Teams have been in the field for several years now, working on ambitious projects for the control of yaws, tuberculosis, leprosy, and malaria. The full incidence of some of these diseases, particularly tuberculosis, is not yet known; but facts are being assembled on which to base future operations and, despite the obstacles of terrain, climate, and nomadic population habits, large numbers of people have already been reached with effective results.

Tuberculosis seems to be a menace in urban centres only; the survey teams which started work in 1955 are expected, however, to extend their operations to a further number of territories in the near future and to establish more exactly its incidence. So far, British Somaliland, the Federation of Nigeria, Bechuanaland, and Mauritius have already

been covered. In addition to their survey work, these teams carry out examinations and BCG vaccination.

Introduction in the Region of the new treatment methods for leprosy has made it possible to dispense with the segregation of sufferers and to provide treatment in fixed centres for patients living at home. Active control work is in progress in French Equatorial Africa, French West Africa, Gambia, Gold Coast, Nigeria, Sierra Leone, and Uganda.

As regards yaws, five countries of West Africa—French West Africa, French Togoland, Gold Coast, Liberia and Sierra Leone—have decided, following a meeting, held last August under WHO auspices in Accra, Gold Coast, to pool their resources in an attempt to wipe out yaws totally from that part of the Continent. Mass campaigns are expected to be in full swing by 1957, the initial aim being to survey a total population of over 11 millions. This will be a great step forward towards effective control of the disease if not ultimate eradication. In addition to the considerable sums to be expended by governments on these operations, UNICEF is expected to give financial help estimated at some $600 000. Similar work goes ahead in other parts of the Region. Mobile units at work for some time now in Nigeria aim to examine two million persons before the end of this year. So far, they have found and put under supervision and treatment some 150 000 active, 300 000 latent and 300 000 suspected cases. After treatment, the ratio of active cases to total numbers examined has dropped from between 60%-80% to less than 1%.

WHO, although excluding for the time being the African Region south of the Sahara from its world-wide malaria eradication plans, is nevertheless encouraging governments to go swiftly ahead with their control programmes before the resistance of mosquito carriers to insecticides can develop. One instance of such resistance made its appearance last year in Nigeria, and WHO has put an adviser and special research team at the disposal of the governmental authorities for further research on the vector in question. General research into the reaction of the anopheles mosquito to insecticides, together with evaluation of the latter's effectiveness, is being intensified, too. The main theatres of WHO-aided operations against malaria are presently located in Kenya, Tanganyika, Liberia and Nigeria, but the Organization is also giving technical assistance to major campaigns on a territorial scale, such as the one undertaken by the French Government in the Cameroons. Interruption of malaria transmission has already been noted or is on the point of being achieved in Swaziland, Southern Rhodesia and Madagascar. On the education and training side, plans have been made to add instruction on the prophylaxis and epidemiology of onchocerciasis to malaria courses in 1957. A special course on the pathological, clinical and therapeutical aspects of this same disease is also planned for 1958.

During the period under review, too, the rural maternal and child health and environmental sanitation programmes were considerably expanded, in line with agreed policies. Work on these two important aspects of public health will go on in the future, side by side with the other major activities.

The funds and supplies to carry out all these operations for bettering the health of the African peoples come from a number of sources in addition to the national health budgets. The main international ones are the WHO regular budget, the United Nations Technical Assistance Programme, and the United Nations Children's Fund. For 1956 alone international contributions will come to more than £4 million. In the period 1952 to 1956, the total exceeded £11 million.

The technical discussions this year—on practical public health measures for control of tuberculosis in Africa—brought out the alarming increase in tuberculosis incidence throughout the Continent, the main cause of which is beyond doubt the profound change in economic and social conditions which is so deeply affecting parts of it. The remedy foreseen, in order to redress the situation, comprises mass BCG vaccination, early

treatment of contagious cases and segregation of positive incurables. These measures set an important problem of accommodation for the health authorities, that time alone can solve. Their efforts meantime are being directed primarily to developing technical facilities for speedy diagnosis and to increasing available accommodation in specialized wards. All over Africa, centres are being established for giving early treatment to active cases. The social aspects of the problem were given due attention, too, and the participants agreed that tuberculosis control calls for improvement in the living standards of the population by fighting such evils as malnutrition, overcrowding and alcoholism.

The Regional Committee will hold its seventh session at its headquarters in Brazzaville, from 16 to 21 September 1957. The 1958 session will take place in Monrovia, at the invitation of the Liberian Government. The subject of the 1957 technical discussions is to be " The role of rural health centres in the control of endemic diseases in the African Region ".

Regional Committee for South-East Asia

The ninth session of the Regional Committee for South-East Asia was held at the Regional Office in New Delhi from 24 to 29 September 1956, under the chairmanship of Dr Svasti Daengsvang, of Thailand. Dr Raghubar Baidya of Nepal was Vice-Chairman. The following Member States were represented: Afghanistan, Burma, Ceylon, India, Indonesia, Nepal, Thailand, Portugal, and the United Kingdom of Great Britain and Northern Ireland. The United Nations, its Children's Fund and Technical Assistance Board, the ILO, FAO, UNESCO, and 12 non-governmental organizations were also represented. The International Cooperation Administration (United States), the Rockefeller Foundation, and the Ford Foundation sent observers.

During its six-day session, the Committee endorsed the regional programme and budget estimates for 1958, approved the annual report of the Regional Director, and accepted in principle detailed plans for an integrated malaria eradication programme for the Region as a whole. The subject of how to make school health education programmes in the Region more effective was dealt with in separate technical discussions.

The draft programme and budget for 1958 was accepted after detailed scrutiny. A procedural innovation this year was the setting up of a programme sub-committee to scrutinize the proposals and determine whether they were balanced and in keeping with the broad policy lines laid down by the Committee and the parent body, the World Health Assembly, and whether agreed priorities were in need of change. Certain sample projects selected at random were subjected to a detailed analysis. Subsequent discussion in plenary session was based on the sub-committee's report.

The regional programme and budget estimates, which will now be sent to the Director-General of WHO for presentation to the World Health Assembly, provide for an expenditure of approximately $6.9 million. Of this total, an amount of $1.26 million is proposed as WHO's contribution from its regular budget and the rest is expected to be made available out of UNICEF and United Nations Technical Assistance funds.

The programme makes provision for more than 180 specific health projects in such varied spheres as control of communicable diseases, maternal and child health, education and training of medical personnel, health education of the public, and environmental sanitation. It also includes 14 inter-country projects pertaining to international seminars, training courses, symposia, and conferences on such important subjects as trachoma, leprosy, and home treatment of tuberculosis.

The problem caused by the acute shortage of trained personnel at the supervisory level in the expanding public health programmes of Member States in the Region focused attention during discussion of the Regional Director's report. The report suggests that the time has come to start shifting the emphasis from WHO's direct participation in field projects to greater assignment of

advisory experts at the national or state level, as appropriate for meeting the fundamental problems arising out of this lacuna. The Committee recognized that there was a serious need for greater supervision of public health programmes; yet a change of emphasis, though possibly desirable and necessary, should not be made too precipitately, since due account has to be taken of the stage of development in some countries and that will necessitate the continuance of WHO direct aid in field projects for some time to come.

The detailed plan, submitted by the Regional Director, for a stage by stage programme to wipe out malaria in the Region by 1961 provided the basis for discussion of the problems involved in eradicating this disease. The sources of funds visualized for the carrying out of the plan, in addition to the participating governments' own contributions, are the United States International Co-operation Administration, WHO's regular budget, the United Nations Technical Assistance programmes, UNICEF, and WHO's Malaria Eradication Special Account.

Most of the members, while supporting the principles of the programme, were apprehensive as to whether the requisite funds would, in fact, become available. The Committee finally approved the tentative proposals in principle and asked the Regional Director to pursue the matter in negotiation with individual governments. It expressed appreciation, too, of the United States Government's position in the matter, as reported by the ICA representative. According to his statement, the United States Government subscribes to the concept of world-wide malaria eradication, and the ICA will continue to support malaria control and eradication projects; it was further stated that ways and means of mobilizing additional resources for intensifying and expanding such programmes are being sought. Lastly, the Committee asked the Regional Director to take up with the Director-General of WHO the question of the urgent need for making adequate funds available to him out of the WHO Malaria Eradication Special Account so as to enable the national programmes to go ahead.

Two days of the session were devoted to technical discussions which, this year, dealt with the problem of how to make school health education programmes in South-East Asia more effective. These discussions are an annual feature of the regional meetings, and delegates take part in their individual capacity.

The group formulated a number of recommendations dealing with such questions as personnel to be used in school health education programmes, training facilities, improving school sanitary environment, and co-operation among the government departments concerned and voluntary agencies working in this sphere. The chief points brought out were the following:

— The aim of school health education should be the development of the child—physically, mentally, socially, and emotionally.

— The teacher should be regarded as a key figure in school health programmes, and steps should be taken to ensure that his social position and emoluments are such as to permit him to practise personally the ideals of healthful living which he is preaching.

— Special courses in health education should be introduced into the curricula of teacher-training colleges so that all serving teachers would be qualified to give instruction in the subject.

— Curricula for health education, as an essential part of general education, should be drawn up in the context of local conditions, needs, and population attitudes, in co-operation with the various agencies concerned and the people themselves.

— The active participation of the relevant government departments—education, health, and so on—should be sought in the planning and execution of school health programmes.

— Minimum standards should be laid down and maintained in respect of sanitary arrangements in schools.

The Committee adopted a number of resolutions in support of such inter-country projects as a symposium on resistance of insects to insecticides, expansion of tuberculosis domiciliary chemotherapy, an inter-regional

conference on trachoma, interchange of biological specimens, training courses on virus diseases, a regional seminar on certification of causes of mortality and morbidity, a combined training course for health physicists, and a regional teaching conference on child health.

It also confirmed its decision to hold the tenth (1957) session in Rangoon, at the invitation of the Government of the Union of Burma, and the eleventh (1958) at the seat of the Regional Office in New Delhi. With regard to the 1959 session, the invitation of the Ceylon Government to hold it in Ceylon was accepted. Health education of the public is to be the topic for technical discussion at the tenth session.

Regional Committee for the Americas

The Directing Council of the Pan American Sanitary Organization, which serves as the WHO Regional Committee for the Americas, held its ninth meeting (eighth session of the Regional Committee) in Antigua, Guatemala, from 17 to 27 September 1956. Dr Carlos Soza Barillas of Guatemala was chosen to preside; two Vice-Presidents were appointed as well: Dr Daniel Orellana, of Venezuela, and Dr Felix Hurtado, of Cuba. The Council was attended by representatives from 20 American republics and from France, Netherlands and the United Kingdom of Great Britain and Northern Ireland, as well as by an observer from Canada.

The Council adopted a budget for the Pan American Sanitary Bureau—which serves as WHO Regional Office for the Americas—for 1957 amounting to $2.4 million. This is an increase of $200 000 over the 1956 budget, the extra funds being mainly for the expansion of work on poliomyelitis, the diarrhoeal diseases, yellow fever, and the zoonoses. This budget, together with the regional allocation of $1 402 970 from WHO and additional funds from the United Nations Technical Assistance Programme, will be applied to some 150 public health programmes which the Bureau is helping the various Member countries to plan and execute. The United Nations Children's Fund is expected, in addition, to make available to the governments concerned substantial contributions of supplies and materials.

The Council also studied plans for the WHO regional programme for the year 1958 which have to be prepared in time for submission to the World Health Assembly in May 1957; it approved a draft programme and budget in the amount of $1 567 980. The proposal for the Pan American Sanitary Bureau programme for the corresponding period is expected to call for an expenditure of $3 million.

Since sound public health planning requires that the two programmes should form an integrated whole—despite the different sources of funds—the Council set up a working party early in the session for the purpose of having both programmes and budgets for 1958 scrutinized in detail. The total plans were judged to be well conceived for meeting the recognized needs of governments in the Region and properly balanced among the various activities.

The Director's annual report for 1955 was discussed and approved by the Council. It reviews the 121 public health programmes assisted or operated by the Bureau during that period. Some 45 of these were either inter-country or continental-wide operations, malaria eradication accounting for nine of them. Fellowships were awarded to 390 health workers of all grades for study abroad or attendance at seminars, and the other activities described cover practically the whole gamut of public health work, including, notably, smallpox eradication, yellow fever studies, environmental sanitation, typhus and leprosy control, and maternal and child health.

Work towards eradicating malaria from the Western hemisphere is to be given top priority, on the instructions of the Council. The Council reaffirmed its faith that the possibility of ridding the Region of this scourge exists, but an essential requisite is continued international collaboration. It especially stressed the Bureau's role in helping to plan and co-ordinate the national

campaigns at the regional level, and the importance of financial aid on the part of UNICEF so that the job may be finished before the possible development of insect resistance to insecticides makes it infinitely more complicated and costly.

During the discussions in the Council, the United States representative announced his Government's intention of making a special contribution of one and a half million dollars to be used for the campaign in the Americas during 1957. The Council welcomed this generous offer as an incentive to all the governments of the Region to press on with this work.

In its resolution on malaria, the Council recommended member governments to give their national malaria services the status and authority necessary for speedy handling of financial and personnel matters, as one means of assuring the success of the eradication programme, and urged them to change over existing control work to eradication measures, furnished with the necessary financial support to carry them through to an end.

According to the Director's report, a marked change in the public attitude towards leprosy has followed the advent of the modern methods of treatment whereby the disease can be arrested, made non-transmissible, and even apparently cured. These new developments have resulted in bringing many previously hidden cases into the open, and indications are that estimates of the incidence of the disease in the Region will have to be revised upwards. The report draws attention to the need for up-to-date legislation on leprosy—aimed at prevention of the disease, early and better diagnosis and treatment—as an essential factor in any anti-leprosy campaign. The Council endorsed the Bureau's approach to the problem and recommended that national programmes be revised in line with modern knowledge and practice. The Bureau is asked to continue work on determining the extent of the problem in the Region, to provide facilities for the training of leprosy service personnel, and to foster exchange of experience among professional staff.

Some representatives in the Council urged that every encouragement be given to expanding and improving training and education programmes, notably through the WHO/PASB fellowship grants, in order to meet to some extent the existing serious shortage of technical experts in all branches of public health and preventive medicine. The Council again recommended Member States to make it easier for public health staff to take advantage of fellowships by making provision for continuing salaries and emoluments during the period of study abroad. It asked, too, that the Bureau's fellowship programme be revised with a view to bringing stipends more into line with increasing costs and to creating various grades of fellowships. The new regulations envisaged are to take account of the fellow's professional or academic status, professional experience, and period of post-graduate study; the duration and type of study to be undertaken; the nature of his work (public health, preventive medicine, administration, hospital, or teaching); the number of his dependants; and the financial arrangements of his government in respect of civil servants studying abroad.

It was reported to the Council that the Bureau has set up a technical committee of experts for the purpose of drawing up recommendations on sanitation, particularly as regards the health of travellers in the Region. The Council is fully aware of the importance of the sanitation problem throughout the area and the need for improving sanitary measures for the protection of the population in general. Pending further action, it directed the Committee to prepare a manual of recommended minimum standards of sanitation for hotels, restaurants, and transportation and other tourist and travel facilities.

It was reported that the PASB's emergency revolving fund had met calls for the purpose of advancing supplies to two member countries in distress. In September 1955, a hurricane devastated the island of Grenada, British West Indies; and the timely delivery of anti-typhoid vaccine enabled the authorities to vaccinate the whole population and thus avert the risk

of an epidemic outbreak of that disease. In the early part of 1956, Argentina had its worst-known outbreak of poliomyelitis, and the Bureau had iron lungs flown down to Buenos Aires in March to help in coping with the situation.

Regional Committee for the Eastern Mediterranean, Sub-Committee A

Sub-Committee A of the Regional Committee for the Eastern Mediterranean met in Teheran from 19 to 25 September 1956, under the chairmanship of Dr Jamshid Amouzegar, Iran's Under-Secretary of State for Health. Apart from the normal representation at the session, Tunisia was participating for the first time in the Region, and the Sudan for the first time as a full Member, pursuant to the Ninth World Health Assembly's decision to admit these two new countries to membership of the Organization.

The most important items on the agenda for the session were WHO's regional programme and budget for 1958 and a number of questions relating to such health problems as malaria, poliomyelitis, leprosy, and favus. Other matters coming up for discussion included environmental sanitation, maternal and child health, public health statistics, health education of the public, and drug addiction, the last-named having particular reference to Iran's present campaign against drug addiction following upon its recent legislation to ban the cultivation of the opium poppy throughout its territory.

Valuable technical discussions also took place, on the topic of health education of the public. A number of observers from the United Nations and the specialized agencies, as well as representatives and health educators from the various countries of the Region, participated in the discussions.

The Sub-Committee had to consider the nomination of a successor to the present Regional Director when he terminates his service with the Organization. The Sub-Committee recommended that Dr A. Taba, who is at present serving as Deputy Regional Director, be nominated, and that his appointment take effect on 1 September 1957 when Dr Shousha retires.

The Sub-Committee had before it a report of the Regional Director covering the normal annual review of the Organization's work in the Region for the period August 1955 to July 1956 and surveying as well its activities as a whole for the seven years since the Regional Office was set up. It is interesting to note the extent to which these activities have expanded over the years so that at present more than one hundred health projects throughout the Region are receiving direct aid from WHO. During this period, too, nearly eight hundred fellowships for study abroad have been granted.

The report goes on to state that the considerable achievements of the past year are not isolated phenomena, but evidence of the gradual progress that has been clearly discernible from 1949 onwards. In order to consolidate these gains, however, governments are urged to take steps to streamline their health administration machinery and to decentralize health services, so as to bring the benefits of the revolutionary discoveries that have transformed the approach to public health problems in recent years within the reach of the population as a whole.

According to the report, communicable diseases—malaria, tuberculosis, trachoma, bilharziasis, and others—constitute the Region's outstanding health problem; and WHO is devoting the greater part of its energies and almost half the available budget to action against them. Since 1949 more than 200 fellowships have been granted for advanced studies on communicable diseases.

The stress laid on the improvement of public health services in the same period, while less spectacular in effect, has been equally important. Public health administration, nursing, maternal and child care, mental health, and many other facets of public health come under this heading; and the demand on the part of Member States for all forms of WHO assistance designed to contribute to the improvement of public health services is steadily increasing. There are maternal

and child care projects under way in most countries of the Region; twelve nursing projects are in operation; and health education of the public forms an integral part of every WHO-aided project.

The report gives special attention to the education and training of medical and other health personnel—a basic objective of the Organization. The Region's activities in this domain include the exchange of ideas between scientists, undergraduate medical education for countries not yet possessing medical schools of their own, and the training of nurses and auxiliary staff.

But while the emphasis has been on the building up of public health services, medical care has not been neglected; and many people, particularly in the younger age groups, are leading healthier and happier lives as a result of the work of WHO doctors, nurses, sanitarians, physiotherapists, and other specialists.

The conclusion reached, however, is that the greatest good resulting from WHO's efforts in the Region is the continuing of the health work started by WHO teams and now being carried on by national staff who have gained a better understanding of the people's health needs and are better equipped to meet them.

The Sub-Committee approved the programme and budget estimates for 1958 submitted by the Regional Director, which call for an expenditure amounting in all to $3 407 160. The funds are expected to be made available from the following sources: WHO regular budget, $1 052 061; United Nations Technical Assistance Programme, $948 099; and the remaining $1 407 000 from the United Nations Children's Fund and other extra-budgetary sources. Provision in the amount of $9600 has been made in this budget for the cost of introducing Arabic as a working language of the Regional Committee, in accordance with the decision taken by the Ninth World Health Assembly in May 1956. The programme and budget is being sent to the Director-General of WHO for subsequent submission to the Tenth World Health Assembly in 1957.

In its discussions, the Sub-Committee gave particular attention to the problems of leprosy, poliomyelitis, malaria eradication, and drug addiction in so far as these affected the Region. It noted recent developments in the management of leprosy patients, notably the new methods of ambulatory treatment and the modified segregation of infectious cases, and invited governments to take active steps to develop anti-leprosy services; at the same time, WHO is asked to set up training courses for the requisite personnel needed to staff such services.

As regards poliomyelitis in the Region, the Sub-Committee recognized that further study of the problem was needed; it recommended that, in the meantime, adult travellers arriving from abroad should be immunized before going into known endemic areas.

Despite all previous control efforts, malaria still continues to be a major health problem of the Region. The Sub-Committee reaffirmed its belief that malaria eradication represents a capital investment of great value and is the sole recommendable policy in face of the potential danger that the mosquito carriers may develop a resistance to modern insecticides. It accordingly urged Member States to use every means at their disposal in working towards this goal and requested the active help of UNICEF and other organizations in the work. It was also suggested that governments should make suitable administrative and financial arrangements so as to allow the anti-malarial organizations to achieve the maximum efficiency in their work.

With regard to drug addiction, the Government of Iran was warmly praised for its decision to suppress opium poppy cultivation throughout its territory; and all Member States of the Region were asked to co-operate with it in its campaign against addiction.

On the invitation of the Government of Iraq, it was decided to hold the 1958 session of the Sub-Committee in Baghdad. The 1957 session will take place, as previously decided, at the Regional Office in Alexandria. The subject of the technical discussions at the 1957 session is to be sanitation in rural areas.

Regional Committee for Europe

The Regional Committee for Europe, which met in Geneva from 10 to 13 September 1956 under the chairmanship of Dr A. Sauter (Switzerland), was attended by delegates from 21 Member States, of which one, Morocco, was represented for the first time as a full Member. Seventeen international organizations, intergovernmental and non-governmental, were also represented.

The Committee paid homage to the memory of the late Dr N. D. Begg, Regional Director for Europe from 1951 to 1956, and received a report on activities during the current year from the Acting Director, Dr G. Montus.

In 1956, work in the control of communicable diseases, including trachoma and other eye diseases, was pursued in Greece, Morocco, Spain, Turkey, and Yugoslavia. Other fields in which WHO's assistance in Europe was sought, under the Technical Assistance Programme, included maternal and child health, nursing, social and occupational health, hospital administration, and environmental sanitation. Under the regular budget, attention was paid in certain countries to the strengthening of existing facilities for the care of physically handicapped children, to various aspects of mental health work, and to the training of sanitary engineers.

As in previous years, the fellowship programme for advanced study abroad remained an important part of WHO's assistance to individual countries in Europe. During the first half of 1956 more than two hundred WHO fellowships were granted in Europe. Administrative arrangements were made for more fellowships than this, however, since many fellows come from other regions to study in Europe.

Under the heading of inter-country programmes, three conferences were held: one on the teaching of preventive and social medicine, one on post-basic nursing education, and one on malaria eradication, the last being arranged jointly with the Eastern Mediterranean Regional Office. During the period under review there were three seminars (on sanitary engineering, virus and rickettsial diseases, and child guidance); and the Regional Office organized or contributed to 11 training courses, of which four were held at the International Children's Centre in Paris. Co-operation between schools and training centres of public health in Europe was further developed.

Perinatal problems, drinking-water standards, and the prevention of accidents in childhood were the topics which study groups or advisory groups considered in Europe in 1956. The Regional Office also sponsored or contributed to studies on child development, alcohol problems, sanitary engineering terms, and the organization of health services in Europe. Its contribution to meetings organized by the United Nations was largely in the field of mental health.

In the course of its review of 1956 activities, the Committee emphasized the value of inter-country programmes. Such programmes represent an important means of developing regional co-operation in public health, and the Committee expressed the wish that they should continue to form a substantial part of the European programme.

Proposals made for 1957 and 1958 follow the pattern of previous years, with the difference that provision has been made, in the form of a supplemental programme, for the return to full participation by States now inactive. The 1958 budget proposals amount to $1.2 million under the regular budget (of which about 41% is comprised within the supplemental budget), some $350 000 under Technical Assistance, and $1.75 million under extra-budgetary funds, this being the amount proposed for expenditure by agencies having joint programme arrangements with WHO (i.e., UNICEF in 1958).

One of the tasks facing the Committee at this session was the nomination of a successor to Dr Begg as Regional Director. Such appointments are made by the WHO Executive Board in agreement with the regional committee (under Article 52 of the WHO Constitution). The Committee's choice was made in private session; and the name of Dr Paul J. J. van de Calseyde, who headed

the Belgian delegation to the session, is going forward to the Executive Board for consideration.

The rights and obligations of Associate Members again came up for discussion, and the Committee recorded its view that Associate Members should be granted full voting rights in regional committees.

The 1957 session of the Committee will be held at the new regional headquarters in Copenhagen, where the Regional Office will be moving during the first half of 1957. For the 1958 session, the Committee accepted an invitation from the Government of the Principality of Monaco.

The subject of the technical discussions at this session of the Regional Committee for Europe was " The prevention of accidents in the home ". The Committee chose as its topic for discussion at the next regular session " The integration of preventive, social, and curative medicine into health services ".

Regional Committee for the Western Pacific

The Regional Committee for the Western Pacific met in Manila for its seventh session from 7 to 13 September 1956; thirteen Member States of the Region participated, as well as representatives from the United Nations Children's Fund, the United Nations Technical Assistance Board, the South Pacific Commission, and other international bodies. Dr J. Bierdrager (Netherlands) was elected Chairman and Dr José de Paiva Martins (Portugal), Vice-Chairman. The Chairman appointed to conduct the technical discussions was Dr Trinidad Gómez of the Philippines.

The Committee reviewed the Regional Director's report on the Organization's work in the Region for the period 1 July 1955 to 30 June 1956. During this period, there was a general expansion of WHO's activities; in addition to modifications in the programme to meet changed local conditions. New work in line with the Organization's latest policy was started—for example, pilot projects on ambulatory therapy and chemoprophylaxis in tuberculosis control, and on the new methods of tackling leprosy. The results of these trials are awaited with keen anticipation throughout the Region, as a preliminary to possible wider application of the new techniques.

Work on malaria control made considerable progress during the period, helped by UNICEF and the United States International Co-operation Administration. Conferences on malaria held at Phnom-Penh in January 1956 and at Kuching in February 1956 gave evidence of the earnest desire in the Region to work towards the ultimate objective of complete eradication of the disease. An auspicious start to this work was made by the establishment of two bodies for co-ordinating control work among their member countries and on an inter-regional basis as well. The support already forthcoming from the Region for the WHO Malaria Eradication Special Fund augurs well for the continuance of the work.

As regards yaws, in addition to the strengthening of existing projects, planning and organizing went ahead with a view to getting control work started by 1957-58 in all the countries of the Region where the disease is endemic. Preliminary pilot projects were almost completed in Fiji and Western Samoa and similar campaigns, planned with the assistance of WHO, were carried out by the national authorities in the British Solomon Islands Protectorate and West New Guinea. All this brings appreciably nearer the prospect of complete elimination of the disease from the area.

The action in the Region to combat tuberculosis was largely confined, during the period under review, to BCG vaccination campaigns. Programmes are in operation in Cambodia, China (Taiwan), Philippines, Viet Nam, and West New Guinea. The BCG assessment team working in the Region issued two reports during the year.

Efforts were continued to encourage health administrations to tackle the problem of venereal diseases; control projects assisted by WHO are already in operation in a number of countries. Interest in such diseases as filariasis, the anthropod-borne virus diseases,

and poliomyelitis was further stimulated in the Region. Arrangements were made, for instance, for setting up poliomyelitis centres in Singapore and Japan to serve their respective areas; and negotiations are in progress with the object of getting a third centre established in the South Pacific area.

There was greater stress during the year on one of WHO's basic programmes—education and training of medical and allied personnel. A total of 126 fellowships was awarded, as compared with 87 in the previous period; 44% of the fellows made their studies within the Region, a rise of 11% over the year before. Five inter-country seminars or meetings of study groups were also held.

WHO also collaborated to good effect in national health programmes in such diversified domains as maternal and child health, school health, nursing, health education of the public, mental health, the strengthening of public health services, and environmental sanitation; a number of conferences, seminars, and study groups on various topics of general interest were organized as well.

In the course of its discussions on the programme for 1958, the Committee decided to ask that WHO give priority to antimalaria projects and provide funds, where necessary, for carrying these out from the WHO Malaria Eradication Special Account. In doing so, it stressed the need for strict co-ordination of programmes among adjoining countries, whether or not within the same WHO Region. It further asked that the United Nations Technical Assistance Board and Committee be requested to provide funds for the establishment of an inter-regional malaria training course in Indonesia. The training of control personnel at the professional level would, it is felt, greatly facilitate the work towards eradication of the disease in the area. An allied recommendation that was adopted concerns a proposal to hold an inter-regional symposium in 1958 with a view to promoting co-ordination of research work on insect resistance to insecticides.

The Committee further adopted resolutions, *inter alia*, noting the action on smallpox taken by certain governments in response to the recommendations of the inter-regional consultant on this disease, endorsing the idea of holding an inter-regional conference on leprosy, possibly in 1958, and advocating both short- and long-term planning in regard to mental health by national health authorities of the Region, as well as a number dealing with the 1957 and 1958 programmes and budgets.

The expenditure called for under the WHO regular budget amounts to $856 522 and $985 061, for the years 1957 and 1958, respectively; the approved supplemental programmes, estimated to cost $157 602 for 1957 and $157 551 for 1958, will be implemented to the extent that inactive Members resume participation in the Organization's work. It is anticipated, too, that funds and contributions will become available from the United Nations Technical Assistance Programme, the United Nations Children's Fund, and certain bilateral agencies, in amounts not as yet determined.

The technical discussions held during the meeting were on the subject of the care of the child of from one to six years of age. Representatives from the United Nations specialized agencies and a number of non-governmental organizations took part, in addition to country representatives. It was generally recognized that the topic was not exclusively a health matter; many other economic and social factors affected the issue and, until these were effectively tackled, the health problems involved could not all be solved. There was unanimous agreement that attempts to improve child care within this age group should be through education, first, of the mother, next, of the immediate family circle, and subsequently of others intimately associated with the child.

A further matter of interest reported to the Committee was the generous offer of the Philippine Government to provide accommodation in Manila for the Regional Headquarters. Apart from the proffered site, which formerly belonged to the University of the Philippines, the Government has also offered a donation of 500 000 pesos ($250 000) towards the cost of establishing the Office.

The Committee expressed its great appreciation and directed that the proposal be transmitted to the Director-General for submission to the WHO Executive Board and the Tenth World Health Assembly for final decision.

The Committee will hold its eighth session in Hong Kong in 1957, at the invitation of the United Kingdom authorities. Manila will be the venue of the 1958 session, and an invitation to hold the 1959 meeting in China (Taiwan) has been accepted. Leprosy control is to be the topic for technical discussion in 1957; and methods and approaches for improving vital and health statistics services in rural areas was provisionally chosen as the subject for discussion in 1958.

People and Places

New appointment for Dr Victor A. Sutter

The World Health Organization has recently lost the valued services of its Assistant Director-General in charge of Advisory Services, Dr Victor A. Sutter. Dr Sutter has resigned to go back to his own country, the Republic of El Salvador, as Minister of Public Health and Social Assistance, after spending the last six years in various capacities on the WHO Headquarters staff.

Born at San Salvador on 12 June 1903, Dr Sutter studied at the National University of San Salvador and at Johns Hopkins University, Baltimore, United States of America. He subsequently held various posts, among them that of medical officer of the Institute of American Affairs—in which capacity he worked for several years in Brazil's health services; director of public health services in El Salvador (1939-1944); and chief medical officer of UNRRA in China.

His first WHO assignment in 1950 was as Director of the Division of Communicable Diseases, a post for which his previous experience, both national and international, fitted him well. He later became Director of the Division of Organization of Public Health Services, before becoming an Assistant Director-General in 1952.

WHO Regional Director for Europe

At its September session, the WHO Regional Committee for Europe elected Dr P. J. J. van de Calseyde, of Belgium, as its nominee for the post of European Regional Director. The post became vacant as a result of the death of Dr Norman D. Begg earlier this year. In accordance with the WHO Constitution, Dr van de Calseyde's name will go forward to the WHO Executive Board in January 1957, for final approval.

Dr van de Calseyde was born in Ghent and completed his studies in that city. In 1930, he became Medical Officer of Health at the Ministry of Postal Services, joining the national public health services in 1935. Since 1945, he has occupied the post of Director General of Health at the Ministry of Health and Families, Brussels.

Dr van de Calseyde is also a member of the WHO Expert Advisory Panel on Venereal Infections and Treponematoses and has represented Belgium for many years at the World Health Assembly and in various other WHO bodies.

Nutrition consultants

WHO has recently made a number of appointments in various parts of the world for the purpose of furthering work on nutrition problems.

Dr Antonio Muñoz, of Guatemala, a medical nutritionist, and Miss Anderson, a South African trained in home economics and having special experience in nutrition, have been assigned to work in Basutoland. Their task is to study the prevalence and geographical distribution of certain diseases and conditions—pellagra, kwashiorkor, ariboflavinosis, scurvy, and anaemia—which account for much sickness and which may be preventable by changing dietary habits, and to collect socio-anthropological data as a basis for advice on a sound prevention programme. Dr Muñoz has had considerable experience in nutrition and has been associated with several experimental field programmes of the Institute of Nutrition of Central America and Panama, Guatemala.

Dr R. F. A. Dean, Director of the Medical Research Council Infantile Malnutrition Group in Kampala, Uganda, who is a well-known worker in child nutrition, is now in Malaya on behalf of WHO, helping to determine how widespread protein malnutrition is in that territory. Recent reports have suggested that this type of malnutrition is common in parts of the country and the Government of Malaya is anxious to know its full extent in order that it may plan effective prevention measures. Dr Dean will advise on the latter, too; it is a subject to which he has devoted much study in recent years.

The Ecuadorean Government has also been

assigned a nutrition consultant, in the person of Dr Léon-Marie André, of France, who was formerly Chief of Nutrition Services in French Equatorial Africa. Dr André is to advise the Ecuadorean National Institute of Nutrition in further developing its work.

Malaria field appointments

WHO's recent staff appointments include that of Dr S. Royce Chowdbury, of India, as senior adviser to a new WHO-aided project on malaria control in a developing part of the Blue Nile Province, Sudan. His headquarters will be at Sennar. Dr Chowdbury, who is a graduate of the Calcutta Medical College, with post-graduate training in malariology obtained at the Malaria Institute of India, Delhi, has behind him a lengthy experience of this type of work; from 1951 onwards, he was in charge of malaria control work in all coal-fields throughout India.

Dr Militiades Zaphir, of Athens, has taken up duty in Ethiopia, as WHO team leader of a malaria pilot project in the Awash Valley, 100 kms east of Addis Ababa. The team is investigating the technical and other problems likely to confront eventual eradication measures. Dr Zaphir took part in the all-out attack on malaria that was conducted in his own country in the immediate post-war years.

Another recruit is Dr Hassan Abdel-Hadi Mashaal, of Egypt, who was until recently Senior Medical Officer of UNWRA at Gaza. He has gone to Saudi Arabia to join the WHO malaria team there as junior malariologist.

Dr Tomás J. Carbel, of Argentina, has been sent to Panama City for work on malaria and *Aëdes aegypti* eradication. Dr Carbel, who received his training in Argentina and the United States of America, served as Director General of Health in the south of Argentina from 1951-1955.

Mexico is at present engaged in an ambitious programme designed to wipe out malaria entirely from the country within the next few years. WHO's latest contribution to this effort is in connexion with project studies on Dieldrin, one of the residual insecticides. Mr. T. E. McNeel has been seconded from his duties with the United States Public Health Services to take charge of this research work. Mr. McNeel's most recent previous assignment was as Chief Malariologist with the United States International Cooperation Administration in the Philippines.

In the Western Pacific Region, Indonesia has just welcomed the arrival of Dr Fritz Ronnefeldt, of Germany, who is replacing Dr P. Issaris as WHO malariologist and senior adviser to the malaria control demonstration project now running in Java. Dr Ronnefeldt received his medical training at the University of Munich and followed it up by specializing in tropical medicine at the University of Hamburg. For the last eight years, he has been engaged in anti-malaria work in Colombia.

Maternal and child health appointments

Dr Gerard Glynn, of Dublin, who is a social paediatrician, was appointed in August of this year as team leader of the Maternal and Child Health Demonstration and Training Centre, Teheran, Iran. The Centre is a WHO-aided project that has been in operation in the Iranian capital for two years now. Dr Glynn has already had wide international experience—with the former United Nations Relief and Rehabilitation Agency and the International Refugee Organization, in the last-named of which he served as Chief Medical Officer of the US Zone of Germany.

Dr Elie Wakil, of the Ministry of Public Health of Lebanon, joined the WHO staff in the same month as medical adviser to the Government of Jordan. Dr Wakil has taken over the direction of the Maternal and Child Health Demonstration and Training Centre in Amman, in succession to Dr J. E. B. McPhail.

A WHO team-leader for the new Maternal and Child Health Demonstration Centre, which is being organized in Benghazi, Libya, with WHO and UNICEF help, took up his duties recently. He is Dr Mohammed Farid Ali, formerly of the Ministry of Public Health of Egypt. Dr Farid was head of the Paediatrics Department of the Government Hospital in Assiut, and had previously served in Ministry of Health child welfare centres in various parts of Egypt. Miss Nawazat Hafez, a public health nurse midwife formerly attached to the Maternal and Child Health Centre in Damascus, Syria, has also joined the staff in Benghazi.

Another public health nurse midwife, Miss Josephine Shoushani, of Lebanon, has been appointed to the staff of the nursing education project now in operation with WHO help in Libya.

In another part of the world, India, WHO has just assigned Dr Erik K. A. Malm, of Finland, to be medical adviser to the State of Andhra. Dr Malm, who is a paediatrician, was on the staff of the Paediatrics Department of the General Hospital in Helsinki prior to taking up this post. His duties will include assisting the Director of the Children's Department of the King George Hospital at Visakhapatnam, and the Medical College there, in the organization and management of the unit. He will also be engaged in teaching paediatrics to undergraduate and post-graduate students, with emphasis on the preventive aspects of child care.

Visiting lecturer of radiology, Cambodia

WHO has recruited Dr Jean T. Rey, of Paris, to serve as a Visiting Lecturer of Radiology for a two-year period. Dr Rey has been assigned to the Royal College of Medicine, Cambodia, where the Organization is assisting in the development of this institution by providing teaching staff and equipment. He is a graduate of the University of Paris and has been radiologist at the Municipal Hospital at Granville (Manche). Among his duties will be the establishment of a curriculum, instruction of students, consultation in radiology for the other clinical departments of the Faculty, and the training of a Cambodian successor as a permanent replacement.

Organization of public health services

WHO's work towards the strengthening of national public health services covers a wide range of activities. Among its recent appointments is that of Dr Robert Bridgman, Deputy Director of Health of the Département de la Seine, Paris, who has gone to Turkey to act for WHO in advising the Turkish Government on hospital planning. Dr Bridgman has interested himself in this subject for many years and is the author of a monograph published by WHO: "*The Rural Hospital*".[1] Upon leaving Turkey, he will go on to Burma, where the Government is planning to build a large new hospital in Rangoon, which, when completed, will probably be the largest in Asia. There, too, he will advise on such matters as hospital staffing, equipment, and regulations.

In another part of the world, South America, Dr Odair Pacheco Pedroso, of Brazil, was appointed in July of this year to assist Argentina in its current survey of health services. Dr Pacheco's special domain is hospital administration. He has been granted leave of absence from his posts in São Paulo—Medical Assistant to the Superintendent of Hospitals and Clinics, State of São Paulo, and Professor in the College of Hygiene and Public Health—to undertake this work.

The Governments of the Federation of Malaya and of Singapore have asked for WHO's help in reorganizing the hospital records system, with a view to setting up a permanent recording procedure that may serve as a basis for the collection of statistical and health information and provide for continuity in medical care services as well. Dr Murray S. Acker, former Director of the Division of Research and Statistics, Saskatchewan Department of Public Health, Canada, was selected by WHO for this two-year assignment and recently took up his duties.

[1] *Wld Hlth Org. Monograph Series* No. 21

Punjab, West Pakistan

Mr Yung Mao Liu, Vice-Commissioner for the Provincial Department of Reconstruction in Taiwan, China, will be leaving his post shortly to go to Lahore, Pakistan, where he will act for WHO in advising the Pakistani Government on sanitary engineering works. The Government's object is to improve water supplies and sewage disposal facilities throughout the Punjab area of West Pakistan. Mr. Liu's duties will also include the organizing of training courses for all types of staff engaged in operating such plants, together with advice on the relation of such works to irrigation, flood control, navigation, power and other water development projects in the Punjab. Mr. Liu, apart from distinguished academic qualifications, has behind him a long experience in sanitary engineering and public works, particularly in the reconstruction and rehabilitation of water supplies.

Western Samoa

Dr Andres Angara, technical assistant in the Division of Tuberculosis, Philippine Department of Health, has been given leave of absence to take up a short-term assignment in Western Samoa on behalf of WHO. He is helping Dr D. D. McCarthy and Dr A. G. Fischer, both of New Zealand, to conduct two refresher courses in preventive medicine and village hygiene for selected assistant medical practitioners from territories of the South Pacific. These assistant medical practitioners are South Sea Islanders who have studied medicine for four years at the Central Medical School in Suva. Dr Angara is deputizing in the meantime for Dr McCarthy, who was taken ill shortly after the courses began in May last, and will continue the work jointly on the latter's return.

Malaya

Dr Alwyn Smith, of England, has recently arrived in Singapore to start his WHO assignment as Lecturer in Public Health at the University of Malaya. Dr Smith, who holds a medical degree and Ph.D. in Medicine of the University of Birmingham, as well as a Diploma in Public Health of the London School of Hygiene, was formerly on the staff of the University of Birmingham as a research fellow in social medicine.

Tuberculosis centre in Iran

The appointment of Dr Pierre Chasles, of Paris, to the staff of the Tuberculosis Demonstration and Training Centre in Teheran was announced in September last. Dr Chasles is to act as leader of a

WHO team which is assisting the Iranian Government to set up an effective TB prevention service throughout its territory. He has been seconded from his post of medical consultant to the Gas and Electricity Board of Paris for the purpose.

Island of Leyte, Philippines

Dr W. Frohne, of the United States of America, who holds B.A., M.A., and Ph.D. Zoology degrees of the University of Michigan, has been selected by WHO to continue the research work on the ecology of snails, carried out in the Philippines for the past three years by his fellow-countryman, Dr N. G. Hairston. This work forms an important part of the WHO-aided bilharziasis pilot control project, started in the eastern part of the Island of Leyte in June 1953 and expected to last for six years in all. The main object of the project is to determine the most effective and economical way of controlling bilharziasis in this area, and data on the natural history of the snail intermediate hosts are essential. Prior to accepting this assignment, Dr Frohne was Chief of Entomology Activities at the Arctic Health Center in Alaska.

Health education of the public in India

Mr Akbar Moarefi, of Iran, will be leaving this month for India to take up duty on behalf of WHO in the Singur training centre of the All-India Institute of Hygiene and Public Health. His assignment is to assist the Government of India in the practical training of health workers in health education methods and practices. Mr. Moarefi was previously director of the Health Education Division of the Ministry of Health in his own country.

Bogotá, Colombia

Dr Elizabeth Nora Mackay, of Canada, took up duty recently in Bogotá, as a health statistician, appointed by WHO to assist the Government of Colombia in this sphere. Dr Mackay holds an M.D. degree of McGill University and a D.P.H. degree of the University of Toronto. Since 1951, she has been serving as medical specialist in the Ontario Department of Health, Division of Medical Statistics.

Mexico City

Dr A. J. Walker, graduate of McGill University, Canada, and parasitologist, has been granted leave of absence from his post of Associate Professor of Tropical Medicine in Tulane University, for Assignment to the PASB Office of Co-ordination of the malaria eradication programme now in operation in Mexico.

WHO Headquarters, Geneva

WHO has appointed Dr Maria Pfister, of Switzerland, as second medical officer in its Headquarters Mental Health Section. Dr Pfister's previous broad experience working as a psychiatrist and psychoanalyst in the Swiss Federal services for refugees and repatriated Swiss during the post-war period should prove of great value in helping to direct this expanding sphere of WHO's work. She is the author of a number of publications on mental health and refugee problems.

WHO Regional Office for the Americas

The Pan American Sanitary Bureau, which serves as the WHO Regional Office for the Americas, recently appointed a new chief for its Division of Administration, in succession to Mr. Harry A. Hinderer. The candidate selected is Mr. D. F. Simpson, who comes to the Bureau from the United States Department of Health, Education and Welfare, where he was director of the Division of General Services. Mr. Simpson has written a number of articles on management in health agencies.

Mankind Against the Killers

This is the provocative title of a recently-published book by James Hemming about man's fight against disease and the important role which is played in this fight by WHO. Dr. Brock Chisholm, WHO's first Director-General, contributes a foreword in which he says: "It is the first time, to my belief, that a book dealing with health on a world scale has been attempted with the aim of interesting young people. That it will interest them I feel sure—and not only them, but older readers as well. The author marshals his facts with skill, but he does more: he breathes life into them to give us a book full of the spirit of adventure." Amply illustrated with pictures from all parts of the world, and including a number of clearly-drawn charts and diagrams, the book is printed in large readable type and is designed primarily for schoolroom use. It is now being translated into Spanish and an abridged version is in preparation for classroom use in India. *Mankind Against the Killers* is published by Longmans, Green and Co., price 15/–.

Review of WHO Publications

Specifications for Pesticides: Insecticides, Rodenticides, Molluscicides, and Spraying and Dusting Apparatus.
Geneva (World Health Organization).
400 pages, 22 figures, 4 tables.
Price: £2, $8.00, or Sw. fr. 24.— (Cloth-bound)

This manual contains the various specifications established by the WHO Expert Committee on Insecticides at its second, third, fourth, fifth, and sixth sessions for the various pesticides against vectors of diseases of man and for apparatus for applying those pesticides. It is intended to serve as a guide for users and manufacturers of these products and sprayers.

The work is divided into four parts, dealing with insecticides, rodenticides, molluscicides, and spraying and dusting apparatus, respectively. The first, and longest, part gives specifications for technical grade insecticides, water-dispersible powder concentrates, emulsion concentrates, and dusting powders, and for auxiliary chemicals, (anti-louse chemicals, synergists, and anti-oxidants). The two parts dealing with rodenticides and molluscicides include specifications for technical grade products and for two concentrated rodenticide preparations. The fourth part gives specifications for compression sprayers, hand sprayers, stirrup-pump-type sprayers, and for hand-carried and front-carried dusters. Annexes contain photographs and diagrams of various types of apparatus and a number of tables.

This volume supersedes the work entitled *Insecticides: Manual of Specifications for Insecticides and for Spraying and Dusting Apparatus*, published in 1953 in a loose-leaf binder. The numerous additions and modifications to the original specifications have made it necessary to re-issue this work in a new format.

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" Since the dawn of history, man has had to match his wits against two-, four-, and six-legged adversaries in a struggle for existence. Once upon a time, when he won these contests, he ate as much of his opponent as he could stomach." Today, the idea of eating meat in so crude and indigestible a form is abhorrent to most people; with the development of agriculture and animal husbandry, however, mankind has come " to depend increasingly for strength and sinew upon the cooked flesh of tamed herbivores ". But the widespread use of such animals for food has brought in its train many problems. Meat is a perishable commodity and its poor handling, whether by the slaughterer, the retailer, or the housewife, is likely to result in ill health and wastage. The farmer, too, has a part to play in providing the consumer with safe and wholesome meat: he is responsible for the health and care of the animals before slaughter.

This comprehensive and well-illustrated book contains contributions from meat-hygiene experts in many parts of the world. Besides dealing with the practical health problems of the meat industry, from the ante-mortem care of slaughter animals to the hygienic processing and marketing of meat and the sanitary disposal and reclamation of by-products, it covers such wider aspects of meat hygiene as the epidemiology of meat-borne diseases; the training of meat inspectors; the current meat-hygiene practices in a number of European countries; and the special meat-hygiene problems in the tropics. In addition, much detail—on laboratory techniques for the detection of meat-borne diseases, on meat-hygiene regulations in various countries, and on design of abattoirs—is given in annexes. The book ends with a useful bibliography, classified according to the broad subjects under which the various contributions are grouped.

This monograph includes a number of the papers read at the WHO/FAO Seminar on Meat Hygiene held in Copenhagen in February 1954, as well as a review of the salient features of the discussions. These papers have, where necessary, been expanded or brought up to date, and several new articles have been contributed. The monograph is not intended as a universal guide to meat hygiene; its aim is to throw light on recent advances and problems in the many and diverse aspects of this vast subject for the benefit of the responsible authorities and students in public health and in veterinary science.

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